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ACTION TO TAKE WHEN BEATEN.

Be not uneasy, discouraged, or out of humor because practice falls short of precept in some particulars. If you happen to be beaten, return to the charge.—Marcus Aurelius.

Striving for Efficiency.

Since attention has been directed to the subject of efficiency, evidences of misguided efforts have been found on every hand, and in every business, by those whose eyes were opened. As a result attempts have been made and are being made to direct the efforts of workers along the lines of intelligent energy.

Some public utilities have established departments of efficiency for promoting the plans of this work. Telephone officials will find much of interest in the outline of plans of an efficiency department recently established by the electric railway company operating in Tacoma, Wash. The work it is endeavoring to accomplish has been divided into three main sections: Promoting efficiency among employes; promoting harmony between departments; and obtaining the good will of the public.

The efficiency among employes is to be promoted by encouraging loyalty, ability and industry. Loyalty is to be fostered through welfare work and personal influence. Development of ability is to be accomplished by means of education, and care in selection of men. Educational efforts are along the lines of teaching the men to be careful (safety) of patrons, self, and freight; the proper use of power; proper care of equipment and track; the rights of the public (courtesy); the care of the injured and the reporting of accidents; the necessity of and obedience to rules; and the observation and report of defects to cars, tracks and machinery. Oral and written examinations are also included under the educational section. In the selection of men, their health, appearance, past record and intelligence are factors which are given attention.

In the promotion of harmony between departments, the efficiency department takes care of matters where the duties of departments overlap. Under this division, it promotes safety by working for harmony between departments, in the training of trainmen and the inspection of equipment, track and overhead plant.

Education is the fundamental which is used in obtaining the good will of the public. This is to be accomplished by advertising. The newspapers, the distribution of literature in street cars and stations, and emblems are the agents used. The education of the public in order to obtain its good will is also to be furthered by more careful and courteous treatment from employes.

The foregoing are in brief the main objects of the company's department of efficiency and the methods and means by which it hopes to produce results.

If Our Ancestors Had Telephones.

Did you ever stop to think what a change would have been made in history had the telephone been on the job several hundred years before it put on overalls and went to work for the human race? In this day and age we are so used to transacting business over the wire that it scarcely seems possible the world could get along without the telephone.

Anthony A. Euwer, writing in an Eastern paper, dilates on the idea of what would have happened in certain times had there been a telephone line in operation. "What changes," he says, "might have taken place in the world's history, had the telephone received earlier attention, we can now but vaguely approximate. If Jonah, after his sensational disappearance, could have established immediate connections with his friends in Nineveh, a whaling expedition could have set forth to recover the kidnapped prophet without further delay.

If he'd had a telephone, Paul Revere might have saved himself all that wild night ride by sitting down and ringing up all the farmers from their beds, and that shot might have been heard around the world three hours sooner, at least. Does any one suppose that Sister Anne would have spent all those hours of agony on Blue Beard's tower looking for succor if she could have called up a suitor to speed

with all haste to the rescue of her darling sister? And little Red Riding Hood, had she dashed to the telephone the instant she discovered the old wolf's perfidy, might have lived to become a dear old granny herself and tell the events of that terrible day to her own grand and great grand children. But no, now that I think of it, perhaps 'tis just as well we didn't have it sooner—history would have been utterly ruined with a telephone."

The telephone, of course, would have been then, as it is today, an impartial aid. It might have saved Paul Revere his "midnight ride," but it also would have warned the British of the gathering of the "embattled farmers" at Lexington. So, after all, it probably did not come at too late a day. As one of the "wonders of the universe," in which Mr. Euwer includes it, the telephone certainly has done its share in making life easier and richer.

The Man with the Duck-Back

By HERBERT KAUFMAN

You can't teach him because you cannot reach him. Information splashes and dashes against his forehead, but never penetrates.

He is invulnerable to instruction—progress-proof.

His mind is like a duck's back! You can shower facts upon him, but not one idea will soak through.

His conceit defends him against opportunity. He has weighed himself upon the scales of vanity and is convinced that the figures are correct. He will not listen to reason, because any truth which proves him inferior to his self-judgment pains his complacency. You can't save a man who won't grasp the lifeline.

He deceives no one but himself. The world is wise to the difference between egotism and confidence. Only the shallow and inexperienced mistake the intolerant, bombastic ass for the strong-willed, clear-sighted leader.

There is no sincerity in a counterfeit. Imitations lack the spirit of spontaneity.

A slight acquaintance soon betrays the fact that his poise is all pose.

There must be something back of a man who puts on front.

Pass him up. You can't reform him, because you can't inform him. Don't try to argue him out of his views. You simply encourage his weakness when you seek to correct his ignorance.

He is a son of Balaam—a human ass—with all the characteristics of his progenitor. He is in love with his voice. He just wants to bray, and you can't think against his noise.

If hopeless, he is also harmless. Civilization has restricted his power to hurt.

In the twilight ages of man, he inflicted his purblind opinions upon society, and contrived to delay the advancement of humanity.

Turn back in the pages of history and you'll recognize his true identity. He's your old friend the bigot—the genius-baiter—the fagot-piler—the book-burner—the man-afraid-of-the-light.

Then, when darkness still brooded over the universal intellect, and scholars and martyrs were devoting their souls and bodies for the Great Cause, he could inflame benighted mobs against the agents of betterment, and purchase prominence and notoriety at the price of wrecked hopes and ruined lives and projects.

But he is a joke now—no longer worth attention. St. George in an aeroplane has destroyed his power.

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Trouble Testing in a Common Battery Telephone Exchange

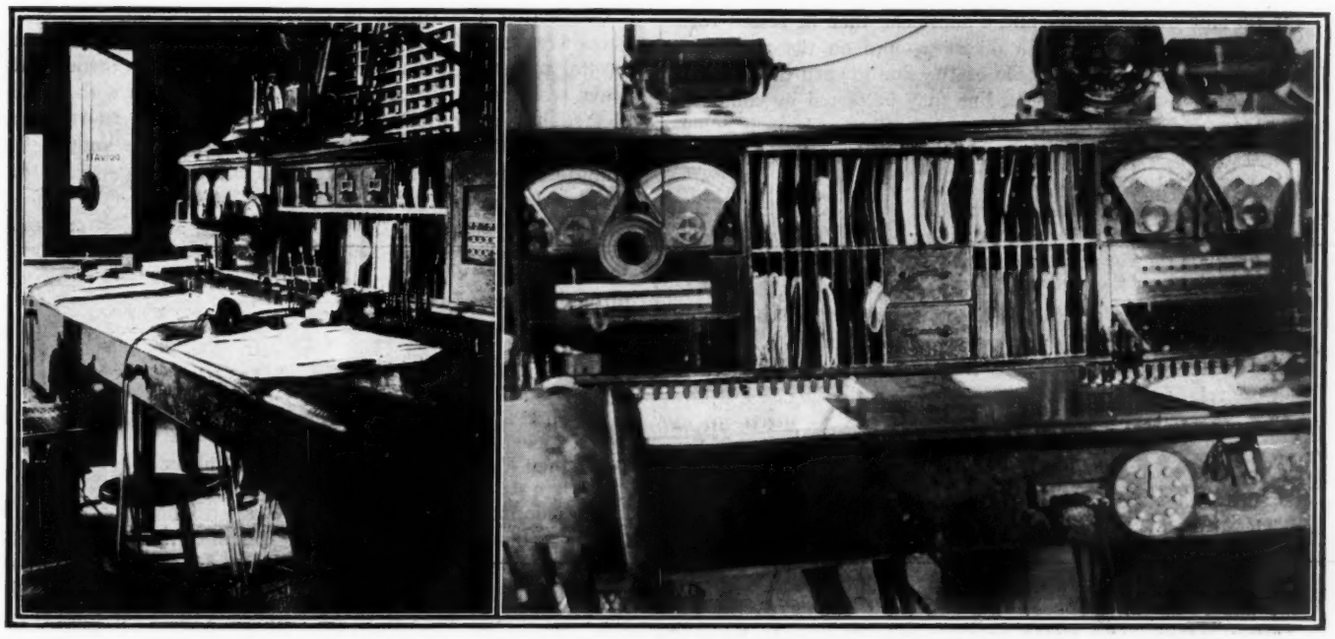
Equipment for Testing Purposes—Methods of Testing in Connection with Milliammeter and Voltmeter—Reports of Troubles and their Recording—Steps in Locating Various Cases—Handling Orders for New Installtions, Changes and other Non-maintenance Work

By W. W. Kinsley, Jr.

In a previous article (TELEPHONY, February 14, 1914,) a system, successfully followed in making out and handling trouble records, was outlined. This article will point out some of the more common tests that are used by the tester to determine the character and location of the reported trouble.

It seems unnecessary to more than state that the most important part of trouble clearing is determining what needs to be done and that if tests can be devised which will to a great extent show the character and location of the trouble before the case is given to the repairman, then a very essential part of the work will have been completed.

In properly equipped offices, testing apparatus is provided so that the tests can be made rapidly and accurately. By means of this apparatus there are various circuits built up that permit an easy determination of the probable trouble. The size of the office together with the character and type of the equipment determine to a large extent what apparatus is needed and can be afforded for testing purposes.



Types of Test Desks Showing Arrangements for Filing Records.

In a small magneto office this may merely consist of a wall set so arranged that it can be connected to any line at will. A key is cut in between the instrument and line connection so that the instrument may have either side connected to the line or to ground. Shorts and grounds are detected by the pull of the hand generator, and opens or grounds by listening with each side of the instrument cut successively to ground. Talking and ringing tests of the subscribers' sets are possible and, with knowledge of the actual line conditions, most of the trouble can be positively and quickly determined.

Between this simple testing outfit and that which is installed in a large common battery office, there is a wide difference, but the more elaborate one calls for much less detailed information regarding the actual line conditions while permitting more accurate tests to be made on circuits that are complex.

The equipment necessary to a large office consists of a complete talking circuit, using frequently a regular operator's breastplate set; a double scale voltmeter and milliammeter; such keys as may be necessary to make the desired combinations of circuits; provisions for ringing any subscriber; test lines from the test desk to the switchboard with associated order wire circuits; test lines from the test desk to the main distributing frame; and such regular telephone facilities as may be needed.

When a case of trouble is received from the repair clerk, the line is first ordered on a test cord and then tests are made depending on the nature of the report. Taking, however, a prominent part in the tests are the voltmeter and the milliammeter, for light grounds and high resistance crosses, that would not affect a magneto system, must be detected in a common battery system. For this purpose a Wheatstone bridge could be used but, as the ammeter and voltmeter are more rapid in operation and are less likely to be injured by excessive currents, they have supplanted the bridge almost entirely.

A testing circuit shown in Fig. 1 gives the keys and associated apparatus that are needed for most of the tests generally made. There are five single and three double throw keys used. Where there are party lines, the generator and ground leads will first have to pass through suitable keys to properly select the party wanted. The keys shown are used for the following purposes: The battery key furnishes battery and ground to the testing circuit through the windings of a repeating coil and a supervisory relay. This battery and ground, passing through the milliammeter, furnishes testing current for it and for sound tests, for shorts and grounds; also talking current for the subscriber, and ground for the voltmeter, when measuring a short.

The shunt key opens a 500-ohm holding coil normally across the line. The direction of an incoming current may be indicated

by leaving both the battery and shunt key normal. When testing toward the board, battery from the line will flow through the holding coil and milliammeter. It will indicate, by the direction of movement of the needle, on which side of the line the cut-off relay is located. In this test the battery key will be left normal. Its use will also signal the operator.

The non-locking scale changing key shifts the testing circuit from one to the other of the scales of both the ammeter and the voltmeter. The high scale of the milliammeter and the low scale of the voltmeter are the ones normally in circuit.

The voltmeter battery cut-off key and the voltmeter reverse key are parts of a double throw key. The voltmeter battery cut-off key replaces battery on the voltmeter with ground and gives a direct battery supply to the milliammeter. The voltmeter reverse key reverses the connections of the voltmeter. Earth current, or foreign battery, is measured by means of this key. By using the voltmeter key and leaving this key normal, an open line may be charged to the potential of the office battery. If this key be then thrown, the line will be discharged through the voltmeter, giving it a kick which in extent will be proportional to the amount of the charge and so to the relative capacity or length of the line.

The voltmeter key opens the ring side of the circuit leading to the milliammeter and closes it through the voltmeter direct to battery. If the battery key is normal, a ground only will be read while, if it is thrown, a ground will be put on the tip side of the circuit and a short can then be tested for.

The ground key places a direct ground on the tip side of the line and opens the tip side of the line toward the repeating coil. An unbalanced or open line may be tested by comparing the inductive noises of each side of the line. Using it enables the tester to talk to a repairman over a short line by having him come in grounded.

The third wire ground key and the third wire battery cut-off key are parts of a double throw key. The third wire ground key grounds the cut-off relay toward the line and opens the third wire of the test circuit. The line cut-off relay, if it is operated on account of a cord being up on a circuit, will then be shunted and released and the operator will be signaled. The third wire battery cut-off key opens the third wire and releases the cut-off relay; the operator is signaled and the line is left clear for a subscriber to call when it is desired to listen in. In such a case the battery key should be normal and the shunt key operated. If there is a transmitter cutout key it should also be thrown.

The listening key and generator key are parts of a double throw key. The listening key cuts in the tester's telephone while the generator key opens the line toward the balance of the apparatus and connects the generator supply to the line. Arcing carbons and water grounds may frequently be made more pronounced by its use.

Before proceeding to a discussion of some of the tests that may be made in connection with the trouble as it is reported, it seems desirable to explain the methods that are used in connection with the two prime instruments, the milliammeter and the voltmeter.

A milliammeter having two scales with ranges of 50 milliamperes or 0.050 ampere and 500 milliamperes or 0.500 ampere will be found to give an excellent working range. As the resistance on the high scale will be only about 0.5 ohm, its introduction into the talking circuit will not affect the operation of that circuit while giving a continuous indication of the current flowing under all conditions. The needle will not swing off the high scale, except under conditions of a dead ground, on account of the resistance of the cord circuit. Consequently that scale is normally used and the low scale is used only when the current is less than 0.050 ampere.

There are many uses to which the ammeter is put in testing and which will later be taken up. By its means we are able to make continuous tests of the current flowing in a line that is being used. The desirability of being able to see what is happening in a circuit while talking to a subscriber is evident to those that have adopted a standard of transmission efficiency. Then, when a subscriber complains of not being heard properly, it is possible while talking to him to see whether the resistance of the line is low enough to make transmission normally efficient. If the minimum has been set at 0.040 ampere and the milliammeter shows that only 0.025 ampere is flowing, the tester will know, without moving a key, that there is ground for complaint. A voltmeter, on the other hand, gives no such comparative readings. It becomes also possible, knowing the normal reading of the line, to tell whether the induction coil has an open primary and whether in that case the subscriber is talking through his ringers. It is essential to compare the readings on each side of the line, by means of the reversing key, so that unbalanced line conditions may be detected.

The voltmeter is so connected as to generally be in series with the circuit being tested and so in making computations the total resistance of the circuit and the total voltage must be considered. In these circuits the resistance of the external circuit is generally comparable with the voltmeter resistance. Formulae should then be developed that will make these readings usable and easily understood. The readings of a voltmeter vary with the volume of the current passing through it and with the pressure impressed on it, as its resistance is constant. The scale then can and is made to indicate the pressure in volts.

Connecting a voltmeter in series with some other resistance gives a voltage reading lower than the total voltage as a part of the pressure is used in forcing the current through this other resistance. By comparing the total voltage with that indicated by the voltmeter, the value of the external resistance is obtained when the resistance of the voltmeter is known. The manufacturers of both ammeters and voltmeters generally specify the resistance of each instrument made.

If R_e = resistance of the external circuit; R_v = resistance of the voltmeter; E = total voltage; and E_v = fall of pressure through voltmeter, then $\frac{R_e}{R_v} = \frac{E-E_v}{E_v}$ or

$$R_e = R_v \times \frac{E-E_v}{E_v}$$

Suppose that R_v = 3,500 ohms, E = 24 volts and E_v = 16 volts, then $R_e = 3{,}500 \times \frac{24-16}{16} = 1{,}750$ ohms.

The continued use of the voltmeter will soon get a tester so that he will automatically read voltages in terms of approximate resistances, when resistances are desired. Some are easily computed as when the fall through the voltmeter is one-third the total voltage, the external resistance is twice the total resistance; when the fall is one-half the total voltage, the external resistance is equal to the voltmeter resistance; when the fall is two-thirds the total voltage, the external resistance is one-half of the voltmeter resistance, etc.

The resistance of the voltmeter itself can be determined by re-arranging the above equation and obtaining

$$R_v = \frac{R_e \times E_v}{E - E_v}$$

When the voltage that is being used is unknown in amount, it may be measured by using the same formula with a different grouping of the factors.

$$\frac{R_e \times E_v}{R_v} = E - E_v \quad \textit{or}$$

$$E = \frac{R_e \times E_v}{R_v} + E$$

Using this formula the tester is able to determine the amount of earth current voltage or branch exchange battery voltage when he knows the amount of the external resistance, and the voltmeter resistance, as he reads on the volt-

meter the fall of potential through it. The foreign voltage is equal to the resistance of the external circuit multiplied by the deflection of the voltmeter, divided by the resistance of the voltmeter and added to the deflection of the voltmeter.

The remaining undetermined factor, the fall of pressure through the voltmeter, may be derived as have been the others from the first formula. It is, however, of infrequent use.

$$E_v = \frac{R_v \times E}{R_e + R_v}$$

Formulae are not things to be shunned but are solely for the purpose of serving one. When it is remembered that a simple substitution of known values together with a little arithmetic will give valuable results, their use becomes a necessity.

The high resistance of a voltmeter protects it from injury when connected to ordinary circuits even if there is a short circuit or dead ground on the line. It has a wide range of usefulness and its readings are observed in almost every test that is made. Resistances under 1,000 ohms, need to be carefully checked as variations in the battery voltage introduce possibilities of serious error. In those cases where the resistances to be measured are low, the use of the milliammeter is called for rather than the voltmeter as then the volume of the talking current, or the amount available for the operation of relays, etc., is the essential thing. The lower resistances can, of course, be measured with the voltmeter by shunting it and making the combined resistance comparable to the external resistance.

A record of the milliammeter reading for each subscriber's line with the receiver off the hook and of the voltmeter reading of those lines that have the bell connected from line to ground, is found to be of considerable value. Where the district is congested and near the office, the variation in the readings will not be great, due to the low line resistance of the short lines, and the readings may consequently not be of as much value as are those on long lines. On the long lines it is often possible to locate the trouble definitely by means of these readings and abnormal conditions can be readily determined.

As the reports of trouble are received by the repair clerk, they are entered on the proper card and the card is given to the tester. He must then rapidly analyze the preceding cases that have been reported and cared for to see whether they have any bearing on the present report. Then the case will be tested and if O. K., or if it can be O. K.'ed by the tester, he will so mark the card and return it to the repair clerk. If it cannot be cleared, the results of the test are entered on the card and it is placed in the proper pigeonhole in the test desk to await assignment to the repairman who will clear the trouble. Reports frequently recurring will be found to require a very definite series of tests and some of them are outlined below. When the same case of trouble is found on a line or station three times in ten days, or five times in 30 days, a special inspection is called for and the card is given to the wire chief for his personal initialing. Test O. K's are treated in the same manner.

B. D. R., "Bell Don't Ring" is treated as follows:

First: using the battery, shunt and listening keys, note the milliammeter readings.

Second: Note the milliammeter reading on the opposite side of the line using the reverse key. A ground gives a reading on one side only but if there is a short or a short combined with a ground, then the readings on each side of the line will be equal. On circuits where the bell at the subscriber's station is cut from one side of the line to ground, there will normally be a slight leak. This must not be confused with a foreign leak.

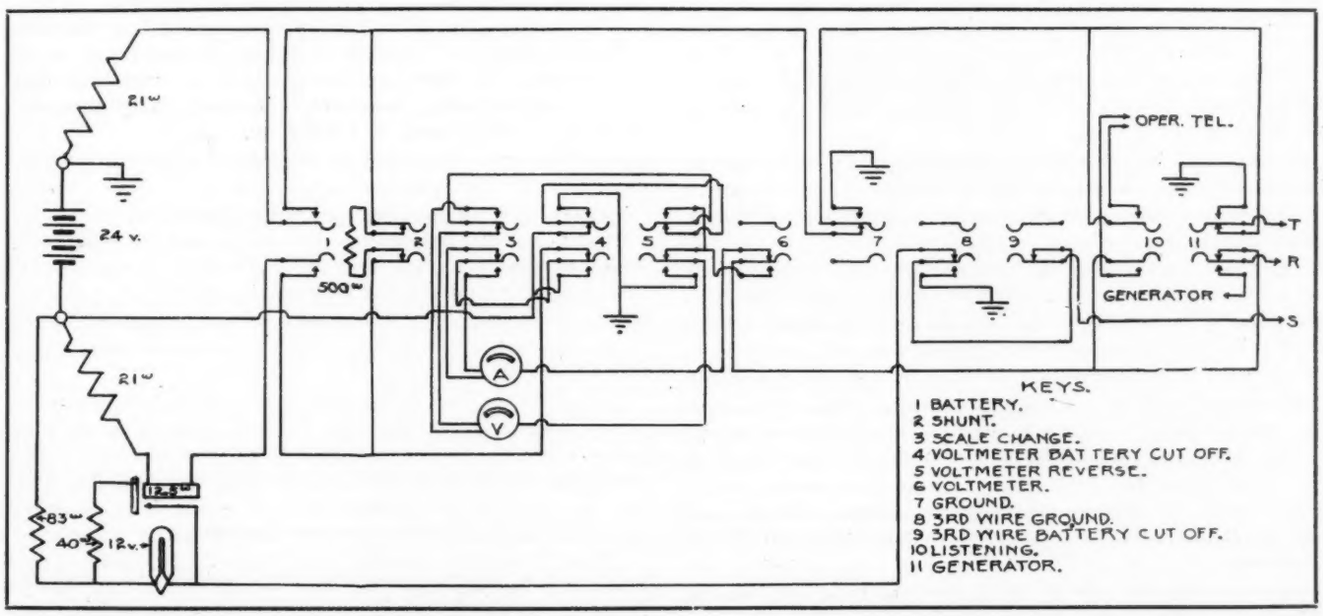


Fig. 1. Testing Circuit for Determining Character and Location of Trouble in a Common Battery Exchange.

Third: Check the milliammeter readings by using the reverse, scale change and voltmeter keys. The normal leakage must also be allowed for in this test. Abnormal readings should be checked by cutting off the battery and then a ground will be indicated on either side of the line by means of the reverse key. The tester can then, from the amount of the readings, instruct the repairman to look at the carbons, the wiring, or to look for a receiver off. A wet short or ground will be indicated by a voltmeter reading that slowly decreases.

Fourth: Should no abnormal conditions be discovered by the preceding tests, a cross with another line should next be tested for. Using the reverse, scale change, voltmeter, and voltmeter keys, a reading in excess of the office voltage indicates a cross with a foreign high voltage line. A lower reading indicates a cross with a local line or a foreign line with a low voltage. If the cut-off relay is not opening the battery contact, a higher reading will be observed. Earth current is also detected by means of this test.

Fifth: Using the battery, shunt, voltmeter and voltmeter reverse keys, an open is tested for by throwing the reverse key back and forth and noting the kick. If the bells are connected from line to ground, then the voltmeter ground key has also to be used. Frequently it is possible to make satisfactory tests with the listening key open but then care must be taken to not let unbalanced line conditions interfere with other trouble.

Sixth: Arcing carbons can often be cleared or made solid by ringing on the line.

Seventh: If no trouble is found and the subscriber answers when rung, the case may safely be tested O. K.

In the case of "B. I." or "Bell Interference," it is generally necessary to question the subscriber and determine what wrong calls are being received. When the ringing current is selected by polarized ringers having the armature held over by a tension spring, the trouble may sometimes be due to improper tension or armature adjustment. In manual ringing a subscriber on one side of a line sometimes causes interference by answering while the operator is still ringing, thus causing "ring overs." Bell taps, due to discharging condensers, are sometimes referred to as rings. A lineman may have accidentally thrown a subscriber to the wrong side of the line. Tests should be made to actually determine whether the trouble complained of is actually being experienced, by asking the subscriber to hang up and answer when the bell next rings and then to ring the other subscriber. Tact must be used in all of these cases to locate the trouble without antagonizing the subscriber.

With "B. K. R." or "Bell Keeps Ringing," if it is a case of bell interference, the trouble will be handled as outlined above. If the subscriber, on being questioned, is found to refer to other trouble, then swinging crosses on the line or, in the case of automatic machine ringing, failure of the trunk to trip may be found to be the trouble. Noise on the line, or a swinging milliammeter needle, indicates the first and trouble with calls from some particular office the second.

For "C. B. H." or "Can't Be Heard," make the tests outlined for crosses and grounds and note the milliammeter reading while talking to the subscriber to see if there is plenty of current flowing and if the line is balanced. Noisy cords at the instrument, loose connections, wrong instrument connections and faulty methods of using the telephone are some of the possible cases to pick up while talking. Hence, it is generally necessary to let the subscriber do a good deal of explaining so that there may be ample time to watch the line. The line should also be tested toward the switchboard.

In cases of "C. H." or "Can't Hear," it is possible that the subscriber on being questioned, will give a clue as to the trouble or that the trouble will be found on the line while making routine tests to see whether the line is in apparently normal condition. If nothing is found, it will probably be necessary to send a repairman on the case to look for trouble in the receiver circuit.

As "C. O." or "Cut Out" trouble is intermittent, the tester generally has to spend considerable time on the line waiting for it to come in. He then has frequently to use his judgment to determine whether the trouble is in the line or instrument. If the line is noisy, the trouble will probably be found in the transmitter circuit, as a loose connection, a poor joint, a loose test clamp, or a bad instrument cord, will give such a condition. If it is quiet, it will probably be found in the receiver circuit at the subscriber's station. This class of trouble can as well be in the central office as in the circuit outside of the office.

In the case of "C. R. O." or "Can't Raise the Office," test for a ground, short, cross or open as outlined above. Using the listening and third wire battery cut off keys, call the operator. Note the milliammeter readings on both sides of the line while talking to the subscriber to see whether there is enough current flowing to operate the relays. The subscriber can be asked to call the operator and the call can be supervised by the tester by using the transmitter cut off, shunt, third wire battery cut off and listening keys.

As a "D. A." or "Don't Answer" complaint is usually made by some one other than the subscriber, and a "Bell Don't Ring" by the subscriber, it is seen that the tests are much the same. If the subscriber answers, questioning may show that he was not home at the time that the case was reported. Tests are made for a faulty cut-off relay, an open multiple jack, or arcing carbons.

For "F. D." or "False Disconnect," test toward the subscriber to see if the supervisory relay is operating properly while flashing the operator and that there is no other office trouble. Test the subscriber's line to see that there is sufficient current to operate the relays. If the milliammeter reads below the allowed minimum for proper supervision, booster battery must be added.

"G. T." or "Generator Trouble," is a common case of trouble where ringing current is supplied branch exchange boards, either by a local generator or by generator leads from the central office. See if the operator can ring the extensions with the emergency hand generator and test the generator leads for open and the generator resistance lamps for trouble.

In the case of "M. P. B." or "Mouthpiece Broken," the subscriber is called for verification and a repairman sent or, if it is thought that there is no other trouble, a mouthpiece only may be sent by mail. An article describing this practice appeared in a former issue of TELEPHONY.

(To be concluded.)

Testimony By Telephone.

Trial by telephone is the latest novelty introduced into Colorado jurisprudence, says the Denver Post. Judge Charles C. Butler of the third division of the district court is responsible for the innovation. He introduced it in his court, so that justice might be done to the parties to a suit on trial before him.

During the hearing of the suit of the Hittle Investment Co. against Miss Grace Kirkpatrick for $120, claimed by the company due for rent, it developed that the evidence of Thomas P. Poyner, 339 West Mexico avenue, was very essential. Poyner, for some reason or other, had not shown up in court and had gone to Overland Park to do some work.

When it became apparent that Poyner's testimony would have some bearing upon the case, someone suggested that he be called up over the telephone and his testimony be taken over the wire. The suggestion proved acceptable to the attorneys for both sides and the court, and Judge Butler at once acted upon the suggestion.

Getting the witness on the telephone and establishing his identity was the work of only a few minutes. Judge Butler engineered the taking of the testimony. With Stenographer Watts at his side and the attorneys near, so that they could hear, he would propound a question. This done, he would hand the receiver over to Watts and the latter would put down Poyner's answer. This process was repeated and repeated until the witness' examination had been finished. The questions and answers were then read to the jury.

"Get Together" Luncheons at Waco, Texas.

The Brazos Valley Telegraph & Telephone Co., of Waco, Texas, has adopted the plan of holding "get together" luncheons once a week which are attended by department heads. At a recent luncheon James Y. Hutchison, traffic superintendent, presented an article on "Telephone Service and How it is Affected by Other Departments." J. W. Reviere read a paper on "Distribution and Plant Expense," and an article on "Rebates" was read by Sam H. Shutt, district manager.

Public Relations of Utilities in Theory and Practice

"The Public be Benefitted!—Persuade the Public It Is Being Benefitted!—Are People and Utilities Working at Cross Purposes?—"Sweating" Utility Servants—How May People be Shown Most Convincingly, Where and How Their Servant is Being Sweated?

By Public Relations Engineer

We have already said that organizations, especially those that are incorporated, are being increasingly compelled by public sentiment and by law, to be as useful as possible; that they are being compelled by law to be perpetually and "supremely serviceable to the public." We have called this a "double standard," or a higher standard—a standard for organizations and corporations that is higher than the standard of individuals.

Enduring an Inequality.

The opinion has been expressed that this standard can not be lowered for corporations, but that organizations and *corporations will have to endure the evils of the present inequality until a corresponding high standard of usefulness and serviceableness has been approved by public sentiment, and established in practice for every individual,* as well as for every undertaking.

It has been stated previously that the philanthropist, publicist, educationalist and ecclesiast are not the only victims of the so-called "inherent and elemental barbarisms of existing conditions." They are merely joint heirs with the industrialist and commercialist—joint heirs of all the evils inherited by the present from the past—and equally responsible for this inheritance of evil conditions. We have said before that in all fairness, therefore, they must be partakers of the sufferings that the commercialist and industrialist experience from this evil inheritance.

But these articles are addressed more especially to those who are in the utility business; to those who have already acquired the scars and callouses which are inseparable from the realities of life—scars and callouses which appear on the hands of everyone who tills the soil, reaps the harvest, provides the transportation facilities, the communication facilities, the power, the light, and the heat, that are required for the every day existence of our nation's hundred million souls as long as they occupy earthly bodies. These articles are addressed to those who bear in their bodies, in their memories, and in their reputations, the marks of the evil conditions to which the whole human race has fallen heir.

And it is perfectly proper, even necessary we think, for the industrial and commercial soldiers who have risked, are risking and must continue to risk their own bread and butter, their reputations, and their legal standing before a rapidly changing set of laws—perfectly proper and necessary for the industrialist and commercialist, fighting in the front rank of the struggle for the earthly necessities of a hundred million people—to realize and to defend at all hazards, the fact that when they were letting the "buyer beware," which was the prevailing practice, and when they were charging all the "traffic would bear," everybody else was doing the same thing. And not this merely: it is most necessary of all that the public be led to as full an appreciation as possible of the fact that even now the vast majority, as individuals, are actually showing both by word of mouth and by practice, that they know no other practice for themselves, than that they shall charge all their traffic will bear.

For two reasons a pause is made at this point to state that the next article will endeavor to answer the question: "What, if anything, does the utility manager lack in his attitude toward the public?" First, it is desired to keep constantly in the mind of the reader, that we are endeavoring to deal with all sides of our chosen field. We want the reader to speak out in meeting and tell us whenever he suspects us of having shown prejudice or failure to take important elements into our consideration. Second, we want, in this article to deal only with certain phases of the previously mentioned "inequality" or difference between the standard for individuals and the standard for organized undertakings. One phase of this inequality is illustrated by the following:

WATCH WORD: THE PUBLIC BE BENEFITED! PERSUADE THE PUBLIC IT IS BEING BENEFITED!

Declaration of principles: No business conducted for the common good is an enemy of the people. As public utilities we are the servants and not the enemies of the people. "We are not enemies, but friends. We must not be enemies." Though an unwarranted struggle for special privilege or for private and personal advantage may have strained, it must not be allowed to break that bond of mutual interest which we have in the preservation of orderliness, in the advancement of the common good, the promotion of good will, the quarantining of ill will and the safeguarding of public relations. A better understanding of this higher interest will enlist the better angels of our natures.—Adapted from Lincoln's first inaugural address.

Query: How many years longer can the proprietorship of the present owners of business be maintained, if progress is not protected as intelligently and as vigorously as we now protect our nation's honor in the sight of other nations? If good will is not cultivated as scientifically as we now cultivate corn? If ill will is not quarantined as effectually as we now quarantine smallpox? If public relations are not safeguarded and advanced as painstakingly as we now regulate and support football?

I happened to be on a local train that was caught, between stations, in a snow drift a dozen or more years ago. All the passengers were compelled to remain in the train through the night. In the morning, a farmer who had been one of the loudest in his outcry against what he called the Standard Oil monopoly, came into the train with a market-backetful of sandwiches—the price, 75 cents each. This is mentioned as an illustration of the spirit and practice of individuals, in contrast with the rule and practice which those same individuals, by their contribution to public sentiment, are increasingly establishing for corporations.

Unfavorable Conditions Must Be Met.

The writer has just finished an automobile trip which began in fair weather, but ended in rain and mud. This experience seemed typical of the experiences of certain utilities, for, when we were about half way through our day's

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journey, "conditions and forces over which we had no control" began to interfere with our progress.

In the first place, it seemed necessary to "take on" two additional passengers, which made a greater burden than the "machine" had originally been planned to carry. It has been said that the United States has developed so fast, its population has grown so rapidly, that scarcely a utility has been built large enough at the outset, to accommodate, for even a short time, the public's demand for service.

In the second place, the rain created a different atmosphere than that in which the machine was originally planned to run. Different surroundings might be more appropriate than different atmosphere, for we got into water so deep that the engine was flooded. Many utilities have unexpectedly gotten into "deep water."

In the third place, the machine was originally constructed for better gasoline and better lubricating oil than we could get in the country through which we were traveling. I have a personal acquaintance with a number of utilities that are sorely in need of better support—better "oil," better "grease," better revenues.

In consequence of this combination of unfavorable and uncontrollable circumstances and conditions, it became impossible to make as rapid progress as we had confidently expected to make when we started; and in a similar manner, the progress of many utilities is delayed.

Machine Must not Be Blamed for Everything.

It was interesting to note the prevailing inclination to charge up all the inconveniences of the day against the defenseless automobile. It would have been too plainly a foolish thing to rail against Providence for sending rain to water the thirsty crops. The poor quality of the gasoline and the oil, was quickly forgotten. The overloading of the vehicle was overlooked. There was a prevailing inclination to treat every inconvenience as the direct result of defects in the "machine." Not one of the entire group of critics seemed to feel any responsibility for the miserably poor roads. This neglect, it seems to the writer, is the most serious indictment that a pessimist might offer against the civilization of our day.

Utilities Are in a Sense, Machines.

I think the men who act as drivers, managers or leaders of utilities, will have no difficulty in realizing that there is a sense, at least, in which they and their undertakings stand in a relationship to the public, which is similar to the relationship of the automobile to its passengers.

The sunniest and most promising hopes have seemed to favor the beginner of every public utility concerning which the writer has any knowledge. Everybody rested confident, at the outset, that the circumstances and conditions were all, and always would be, favorable. At the outset the utility manager is like the driver of the automobile—freshly shaven, newly laundered, and shoes shined. His new plant, like the freshly washed and polished automobile, is a guaranty of everything that the most imaginative and exacting could suggest or demand. During the first half of the cycle, or day, the early promise of fair weather may be realized. The load may not be too much for the plant, and even words of encouragement may be heard from those who are enjoying, for the first time, the experience of a previously unknown "service."

Rainy Days Will Come.

But rainy days must come eventually. The "load" usually becomes greater than the plant was originally planned for; the novelty of the new service wears away; those who in the cool and refreshing breeze of the morning, praised the burnished machine and its liveried driver, begin to curse the begrimed driver and the bespattered machine as the heat of the early afternoon comes upon them and ill will between driver and passengers—antagonism between manager and patrons—becomes acute.

Experience Effective but Expensive Teacher.

In my recent automobile experience, I had the companionship of one of the brainiest and most resourceful men, whose acquaintanceship it has been my good fortune to enjoy—a man who is a leader by reason of his fitness for leadership. Unfortunately he has had no practical experience as yet with automobiles, nor has he acquired sufficient patience to remain passive under difficulties of the sort which we had to encounter during our recent tour. Therefore, every movement that was made in our struggle against bad weather, bad roads, bad "gas," or bad oil, was intensely interesting to this man of extraordinary ability—somewhat annoying to him, also.

"What is the purpose of the part you are adjusting?" "What are you doing that for?" "Wouldn't it be better to do it this way?" Those and similar questions finally became unendurable, so unendurable, in fact, that the driver of the automobile said:

"There is a great deal that I do not know about gas engines, electricity, etc. I am perfectly willing, therefore, to turn this 'machine' over into the hands of any one who will take charge of it. From the standpoint of my own selfish convenience, I would prefer to sit and let the automobile protect me from the weather, if some one else will act as driver and mechanician; prefer to remain inactive as a passenger—rather than bear the responsibility of getting these passengers through to the desired destination. But since that is not possible, in all fairness and in all good nature, you should not, under our present difficulties, ask me to stop using the little knowledge and experience I do happen to possess. You should not ask me at this time to teach you, nor to answer your questions, unless you are willing to take upon your own shoulders the whole responsibility—unless you are willing to change places, making me the passenger, and you the driver of the 'machine.'"

You would hardly be willing to ride in a street car, or upon a railway train that was being operated by a man who had never served one hour as an actual apprentice. Nor would you be willing to risk your life in a street car or a railway train, the motorman or engineer of which was being constantly scolded or otherwise interfered with by a wholly inexperienced, though highly commended electrical or mechanical student or "expert."

Yet men who have never borne, for as much as one hour, the responsibility which must be carried by the one who secures the credit, or gets together the property that is required for the operation of a utility; men who have never organized, directed or developed a corps of employes, such as is required for the operation of a utility; men who have never experienced the unfavorable winds of opposition from misinformed or misguided enthusiasts or demagogues; men who have never contended with sleet, snow, wind or financial panic—seem now to have the encouragement of the mastering public, whenever they scold or otherwise annoy the motorman, the manager, or the leader who is operating one of the people's utility plants or businesses.

"Sweating the Public's Servant.

It was the duty of the writer to take part in a series of conferences which were held between a public utility organization and a committee of five, representing its patrons. The chairman frankly declared that the patrons had instructed his committee to deal with the utility exactly as a man would buy a horse, a suit of clothes, or anything else for which he might have need; that the "patron wanted to get everything possible out of the utility"—wanted as

much as they could get in return for as little as possible of their cash.

IF A UTILITY IS BANKRUPTED, WHO CARES?

It happened this chairman, a bank cashier, was also a very active and a most commendable church worker. Addressing my appeal more particularly to him, I asked whether the committee felt called upon to secure, if they could, rates low enough to bankrupt the organization that was serving them.

Without seeming to think it the least bit inconsistent, he replied: "Why not? The property would still be here, even if your company should 'go broke,' would it not? Could not the bankrupt property be bought in, by some one at a bargain counter price? And would not the bankrupting of the present corporation, help the public to get service below cost for a number of years to come, just as a bankrupt or a fire sale of clothing, might help one to get an overcoat below cost?"

The chairman of this committee, with which we had to deal, was heart and soul against those manufacturers of clothing who have been accused of practicing "sweat shop" methods. I am sure he wanted to be thoroughly upright and fair. Therefore, if it had ever occurred to him that he, himself, was using the "sweating" principle, he would not have talked as he did. He would not have treated the public utility servant as he did. He would not have tried to "sweat" his utility.

Is not a constantly increasing percentage of utility managers facing the application of this "sweating" practice? Why do the people "sweat" their utilities? Something by way of answer will be said in another article. In this article, it is hoped that certain suggestions, which have been offered, may help the leaders of organized undertakings, and of utilities more especially, to see a little more clearly how to meet some of the most practical and most puzzling difficulties which they encounter in their relationship to public sentiment.

A SCIENCE OF PUBLIC RELATIONS.

The author and the publisher desire the co-operation of all who will interest themselves in the development of a good will service; of all who will engage in the work of a good will fellowship; of all who will help to think a way through; of all who will aid in the development of a science of Public Relations.

Marketing Farm Produce by Telephone.

Theodore N. Vail, president of the American Telephone & Telegraph Co., has some interesting things to say about the marketing of produce by telephone. In the course of an interview in the Country Gentleman he indicates that he is looking forward to the day when farmers will call up their city customers regularly every morning and make arrangements with them for such foodstuffs as their consumers will need for the day. He says that in his opinion this plan will eliminate the waste that now comes from peddling garden stuff until late in the day, when it becomes wilted. Both garden and orchard stuff can be vended in this way, in his opinion.

By way of showing what a monster agency the farmers already have with which to carry out these suggestions, Mr. Vail states that there are about 7,000,000 farms in the United States, and that there are about 3,000,000 telephones in rural homes. The cost of services has purposely been made very low, the rates ranging from $1 to $2, and in many cases only toll charges are levied where groups of farmers have installed mutual systems. Mr. Vail makes the remarkable statement that the rural telephone goes to more farm homes than the rural free delivery. He bases the statement on the fact that the farmer's mail service goes only to the nearest crossroads for a goodly portion of the families.

There is another suggestion Mr. Vail makes for carrying out the idea of marketing by telephone. He advocates headquarters in every city and town where farmers can sell to get quotations on produce for the day. If a farmer might have two or more such price markets with which he can connect it would give him a choice of markets when he sets forth in early morning with a wagon load of garden stuff. He advocates the establishment of these centers by farmers' co-operative societies. There would be two birds killed with the same stone. In the first place there would be less waste and loss to the farmer through spoiled produce while seeking a market after reaching town. In the second place, the consumer would come into direct contact with the producer, and the cost of farm produce would be less to the consumer.

Cincinnati's Telephone Mystery.

A novel telephone installation which the Cincinnati & Suburban Bell Telephone Co. was not "in on" recently occurred in Cincinnati on the day preceding July 4th. Nothing seemed lacking to make it a wire tapping mystery, says the Cincinnati Times-Star in proceeding to tell of the sleuthing activity which followed the discovery of the audacious undertaking. Pedestrians on Vine street near Fourth started the excitement; telephone officials took it up; and finally Fire Chief Bunker brought the solution of the wire-workers' villainy.

A squad of men was seen, the members of which were carefully picking their way over the roof of the Burnet House, rolls of wire over their arms. Here and there a connection was made, the wire carried by the men being trailed over the roof and over toward the Chamber of Commerce. Soon a window of the telephone company's office, across the street, contained an interested spectator. When the strands of wire were carried over onto the Union Central Life Building and the men still continued to extend their lines, the telephone official became more and more interested. Soon the wire had been carried up past the 23rd story of the skyscraper and was still going. Finally it reached the tower on the 38th story; the wire squad was seen to instal an instrument on the tower; one of the men held a field glass as if seeking to give warning of anyone penetrating their scheme.

That was too much for the telephone company investigator. He sent a rush call to Captain Malcolm McIntyre, superintendent of the Union Central Life Building. He said that some one evidently was trying to get telephone service without taking care of the proper minor details, such as signing contracts and paying rentals. McIntyre became aroused—but only for a moment. He sped up to the tower and found—not a band of desperate wire-tappers, but a group of Cincinnati's fire fighters, under the direction of Fire Chief Bunker, installing a telephone in the tower. It was all a very regular—though novel—operation. Chief Bunker had been granted permission to station men in the tower all day and evening of the "Fourth" to watch for roof fires in the downtown district. The men were equipped with field glasses and the special telephone, connected with the fire department's own system, was used to give warnings of blazes that might be started by falling balloons and rockets.

To Follow Up Lost Calls in England.

The postmaster general of England states that hereafter the reduced charges at present made for abortive trunk calls will be abolished, and that a system of following up trunk calls, which have failed at the first attempt will be introduced, without extra charge.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Every Practical Telephone Man

By Paul Hamilton

"We finished the general outline of the board, if my memory serves me rightly; that is, the general arrangement of the equipment with some of the principal reasons for such an arrangement," said Mr. Barrows at the regular weekly conference.

"Beginning again at the front of the board, almost the first thing to be seen is the operator's transmitter, provided it is of the solid back type, suspended from an arm. Naturally this leads us to the consideration of the circuit to which it is connected.

"The operator's circuits, like instrument circuits, vary considerably. Their proper operation is, however, a very important matter. Both transmitter and receiver must be of high efficiency. Where there are several operators, sitting with elbows almost touching, it is essential that their voices must be as low as possible and still be transmitted distinctly to the subscriber's receiver. If an operator must raise her voice, it may annoy the operators in adjacent positions. If the subscriber cannot hear her distinctly, it irritates him. If it is necessary for an operator to repeat frequently, she soon acquires the habit of almost shouting into the transmitter.

"A loud tone of voice, or we may say a large volume of sound, is not as easily modulated as a low tone; that is, expression is not as effectively made a part of it. It sounds less deliberate and impressive. Emphasis and accent, two essential element to plain speech, are sacrificed. Therefore an operator's transmitter must be sensitive and also be arranged in a circuit which will transmit its vibrations out on the line in the most effective manner."

"The coil in this board is like the one we use in the instruments—it looks just the same," Frank remarked.

"The one we have in this board is just the same, or nearly so, I presume, but for common battery a different coil is used at the board. This is the main difference in that and the instrument circuit in our new board. The wiring is like this: Under ordinary conditions this circuit (Fig. 110-*A*) is very satisfactory."

"Just what is the difference between it and a local battery circuit?" the Doctor asked.

"Well, here's the local battery circuit (Fig. 110-*B*). In the common battery circuit a condenser has been added in the transmitter circuit, also a retardation coil, or rather the coil and afterward a condenser.

"These additions were made for this reason: As I told you it requires but a small amount of current to operate a receiver. We know that two or three dry cells are sufficient. In common battery systems, we use 11 cells or approximately 24 volts. With this voltage, we have an excess of current. This has a tendency to heat the carbon of the transmitter. Also as the current comes direct from the cells, the flow is not even but varies, the variation being enough to cause a grating or frying noise in the receivers. To overcome that and to cut the current down a retardation coil was introduced into the circuit."

"Like a resistor coil, only it ain't," said Germany.

"No, it is like an induction coil with a single winding. The magnetic action of the core retards the flow of current. The electrical energy is used in passing through the coil. While this gives the quality of current required, its flow is what may be termed sluggish and the transmitter does not operate properly. To overcome this we place a condenser across the circuit, ahead of the coil and back of the transmitter.

"Battery does not flow through a condenser, but there is no limit to the number of times it will charge and discharge itself. Its action in this circuit is peculiar. With the circuit at rest, the condenser becomes fully charged from the current pushing through the coil and held in check by the transmitter and induction coil. The instant the resistance of the transmitter is reduced, current rushes into and through the primary of the induction coil. But as it passes slowly through the retard coil, the supply is theoretically exhausted before the transmitter diaphragm has reacted, and upon its second impulse, there is not sufficient battery to cause the proper inductive action in the secondary of the induction coil."

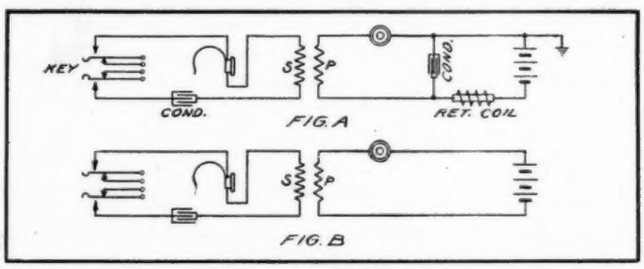


Fig. 110. Common and Local Battery Operators' Circuits.

"But battery does not flow through a condenser," objected the Doctor; "that is, direct curent does not."

"The latest conclusions seem to prove that neither direct nor alternating current pass the gap in the circuit made by the condenser," answered Mr. Barrows. "I had not intended to discuss the condenser at this time but, as we find it here in this circuit, it is a difficult matter to make clear its use unless we understand its action thoroughly.

"A condenser is one of the most useful pieces of apparatus we have and one which can be used for various purposes.

"To begin at the beginning, we must go back to static electricity. We can even use Franklin's experiments with his famous kite. Every element, whether a conductor or a non-conductor, will receive and hold a certain amount of electricity upon its surface.

"History tells us that Franklin went out during a thunder storm to ply his kite, in order to prove his theory that lightning is electricity. We cannot presume that his kite was struck by a bolt of lightning. He merely illustrated the theory of our present condenser. We can easily see, in the light of subsequent developments, that the surface of the kite became charged with electricity, opposite in polarity to the earth.

"The old philosopher was wise enough to insulate his hands from contact with anything which offered a path for current to ground through his body. When he finally did connect the kite with ground, by means of a key, as it is stated, there was a spark. In all probability this was nothing more than the static or condenser discharge from the kite's surface. It is a matter of little doubt, now, that, had he gone out in a dry snow storm, he would have had a similar experience.

"Glass, which is a non-conductor, has a tendency to become charged upon its surface. A glass condenser would be very efficient but, in order to secure sufficient surface for any purpose, the plates would be too large and unwieldy. This is the principle however: Condenser relation between the glass plates (Fig. 111) is this. Both plates are connected, one to each

pole of the battery, but the plates are insulated from each other by an air gap. While the plates cannot be charged to more than a certain capacity, sufficient voltage or pressure behind the charge, will force the current across the gap, causing a spark.

"Now suppose we short circuit the batteries out of the cir-

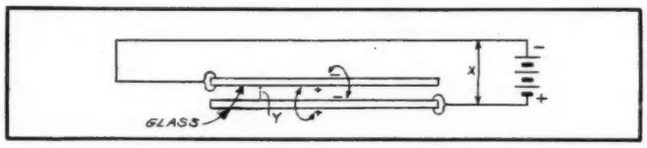


Fig. 111. Condenser Relation Between Glass Plates.

cuit at *x*. The plates still retain their charge, but if we connect them at *y*, they would discharge."

"Leaving the connection at *y*, and removing *x*, would the batteries be short?" the Doctor asked.

"No, not if glass were used, but the plates would not become charged. But if the connection at *y* were removed and that at *x* left, the glass plates would become charged again. I recall an illustration of this principle in telephone practice. A toll line was constructed from *A* to *C* (Fig. 112) with *B* as an intermediate station. There was a delay in cutting in the station at *C* and finally the plan was postponed indefinitely, although the line had been strung. There were several points that reached *B* through *A* and all complained of poor transmission. Between *A* and *B* the trouble was not noticeable in ordinary service. The engineers' tests showed that the condenser capacity of the dead wire between *B* and *C* was sufficient to cut down the transmission to points beyond *A*.

"There is this difference between the action of this dead wire

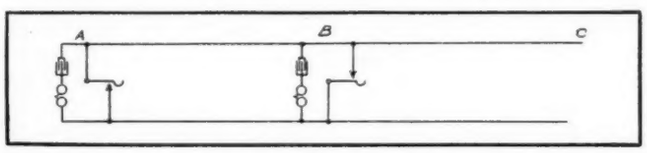


Fig. 112. Capacity of Dead Wires.

and the glass plates: The wires, being conductors, offered a path for current to ground at points where the insulation was poor. Even if properly insulated, their connection with the line would have a decided negative effect upon transmission to points very far distant."

"The only condensers we have, are tin-foil," said Frank. "Germany opened one to fix it once."

"You mean that tin-foil is a conductor, which is right. To get a large enough surface in a compact form was the mechanical difficulty to be overcome. Rolling tin-foil between sheets of tissue paper saturated in paraffine was the solution to the problem. A condenser is made of five layers, three of paper and two of tin-foil (Fig. 113), with one end of each

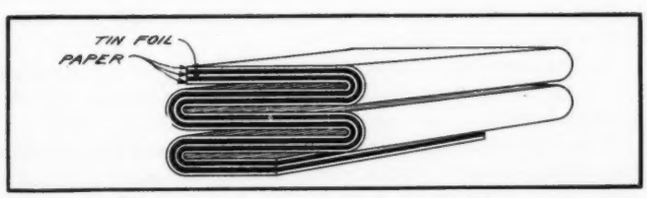


Fig. 113. Construction of Condenser.

sheet of tin-foil brought out for connecting. In this way a large surface can be rolled or folded into a compact form."

"But a condenser—it doesn't matter which way you put it. In this one you show a positive and negative side," said Frank.

"One side of a condenser is positive and one negative in every case, but as both plates are exactly alike, either can be used for either polarity. While we assume that positive and negative battery are different, they are exactly the same in regard to condenser plates."

"Any more pictures," asked Frank with a grin at Germany.

"Well we might show it this way. Here (Fig. 114) we have a condenser connected across an alternating current machine. We start the machine and send out a positive impulse which collects at the condenser. When the armature of the machine passes a given point, a negative impulse is sent out toward the condenser and the positive current returns to the machine; at least both bells will ring simultaneously, but the ringer armatures are drawn to opposite coils. Thus it is presumed that the condenser merely charges and discharges. But we are away from the subject.

"The use of a condenser in the talking circuit is somewhat different. In the case we have shown here (Fig. 114) it charges and discharges entirely and perhaps adds impetus or force to the current it discharges. In a talking circuit, this effect is not to be desired."

"How do you test a condenser?" Frank inquired.

"That is very simple. First charge your condenser by mo-

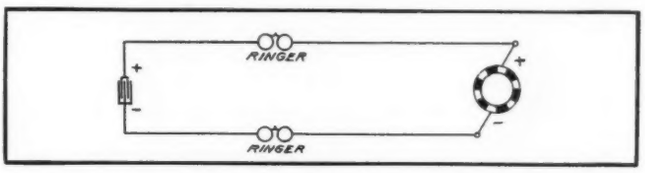


Fig. 114. Action of Alternating Current on Condenser.

mentarily connecting it across a dry cell. Then place your telephone to your ear and touch the points of the condenser with the clips simultaneously and you will hear a sharp click, if the condenser is O. K. If you hear no click, it is evident that something is wrong.

"If you care to know whether it is open or short, put your telephone, condenser and battery in series. If you get a click every time you break the circuit, it is short, otherwise it is open. It isn't important what the nature of the trouble is. The first test tells you it is not O. K. and a new one must be substituted.

"I guess we will go into this circuit again another evening. It is too late now to give it proper consideration."

(*To be continued.*)

International Safety Exposition.

The second International Safety Exposition will be held in New York, December 12 to 19 at Grand Central Palace, under the direction of the American Museum of Safety. The purpose of the exposition is to show how the health and safety of the worker is being looked after in the various American industries, manufacturing, trades, railroading, building, business and engineering, as well as the methods which have been adopted for the welfare and education of employes.

The scope of the exposition will be limitless, embracing everything devoted to health, sanitation, safety, accident prevention, education, welfare, and the advancement of the science of industry. It is an excellent opportunity for the large industries and for manufacturers to educate the public in what they are doing to conserve and improve the lives that are dependent upon them. Each day of the "safety week," which the week of the exposition will be known as, will be devoted to the exploitation of a special branch of safety work. There will be a manufacturers' day, a transportation day, a building trades day, a fire and explosive day and a greater New York day. Sunday, December 13, will be known as workers' day, and the exposition will be open then for all those whose work will make it impossible for them to attend during the week. Following the international practice, which was adopted at last year's Safety Exposition, there will be five grades of award for exhibitors in every branch of industry.

The July Show

Growth of Banks—A Typical Bank Letter

By J. C. Kelsey

Consider the banks, how they grow; they toil not, neither do they spin; yet I say unto you King Solomon in all his glory never **owned** a bank like one of these.

The ideal of the past decade was a billion dollar corporation—and then some.

It was said that one man could finance and personally operate a stage coach, but no one could do likewise to a transcontinental road.

One man could own a ferry boat but that did not signify that he could do the same for a modern steamship.

And one could build a buggy, but he could not turn out a Ford car every thirty seconds.

Separateness certainly became old fashioned.

And the theory of co-operation is all right.

Men must co-operate to operate transcontinental roads, steamships and build Ford cars.

But the error of the past decade was that man went further.

They thought they could monopolize the railway, steamship and nearly every other device.

The Pennsylvania railroad of itself is a mighty machine, an efficient organization, and no man could improve upon it.

It requires such an organization to handle all the freight and passenger service between the large cities it reaches.

The New York Central is also a great machine, reaching practically into every place occupied by the competing Pennsylvania.

Yet if both roads were consolidated, the world would see failure instead of individual success. It would be a quick new Haven affair, simply because co-operation and combination would be carried too far.

And it applies to the telephone.

Let one great company build a universal long distance telephone system.

That is co-operation, and a successful thing, entirely necessary to the country.

But once drive the co-operation further, absorb all the feeders and local exchanges, put them on a monopoly basis, and then ruin will come on because this combination would be carried too far. We know that this is an economic fact.

Consider the banks, how they grow.

Naturally they have had to follow the lead of the great industrials.

A billion dollar industrial corporation naturally handles money on a ten million dollar unit basis.

Its dividend accounts, even, will run to that much per quarter.

If we may judge the apparent protest made against the use of two telephones, we must suspect that there must be protest at being compelled to use more than one bank—horribly inconvenient, you know.

So the banks have merged and merged until they are commencing to approach the billion dollar stage.

A bank can only sensibly or legally loan one-tenth of its unimpaired capital to any one institution even for a moment.

So if you want the cash to buy an elevated railroad in Chicago for $50,000,000 you would have to go to more than one bank.

So that leads to the question, is there at present any bank which could handle a deal of **that** size.

Following is a list of 25 leading world's banks.

You will find one American bank, and when you compare it to some of the European banks, it really does seem small.

In the following list, the loaning power is not considered, the deposits only indicating the size of the bank.

It naturally follows that the larger the deposits, the greater must be the unimpaired capital and consequent loaning power:

1.	Imperial Bank of Russia	$630,000,000
2.	Lloyd's Bank, London	521,000,000
3.	London City Bank	470,000,000
4.	Credit Lyonnaise	447,000,000
5.	London and Westminster	441,000,000
6.	Deutsche	395,000,000
7.	Society Generale of Paris	362,000,000
8.	Bank of England	356,000,000
9.	National Bank of England	339,000,000
10.	Hong Kong and Shanghai	309,000,000
11.	Barclay & Co.	304,000,000
12.	Compton Escompte	283,000,000
13.	Bank of Spain	281,000,000
14.	Discanto Gesellshaft	250,000,000
15.	Dresdener	240,000,000
16.	Banco Nacan Argentina	236,000,000
17.	*National City of New York	221,000,000
18.	Paris	218,000,000
19.	Russ Bank	218,000,000
20.	Union of London	210,000,000
21.	Bank of France	201,000,000
22.	Capital and Counties	200,000,000
23.	Canadian Bank of Commerce	199,000,000
24.	Imperial Bank of Germany	198,000,000
25.	Bank of Montreal	195,000,000

In looking over this list, our American bank is number 17—we have but one in the list.

You cannot but be impressed at the immense commercial power of England.

In the first ten banks, England has five of them, with two billion cash deposits, enough to buy the Pennsylvania railroad outright.

Yet this does not mean that we are behind the other countries.

In England and all countries, banks are allowed to branch out. In the United States, we are not allowed to use branch banks.

It would not require great imagination to see that a chain of banks in New York, Philadelphia, Chicago, St. Louis and other large cities would give America a predominating position.

Yet in America the wave of centralization has begun to recede.

It began at the money trust hearing.

While the banks toil not nor spin, and use other people's money to the most intense degree, they certainly take themselves seriously.

And best of all, they reveal themselves as hopelessly conservative.

The extracts of the Chicago bank letter which will follow show something of the spirit of the Boston Commercial Club, which did not want the tea dumped into the harbor.

"The Mexican problem has been so long a factor of disturbance that the country will benefit immensely by the restoration of order, and adoption of a program which will make it possible for our government to withdraw from the situation entirely."

From this we glean that the banking opinion supports Huerta and wants to let well enough alone.

This is revealed by the second paragraph of the letter: "If Congress should take an early adjournment it would be a great source of relief for a people who have become weary of law-making and proposals for disturbing legislation."

This bank wants the surgeon to withdraw the chloroform and let the patient up, only to operate on him later.

And then the bank letter blames the Claflin failure on the government—that hopelessly large and mismanaged concern which existed so long on other people's money:

"The Claflin failure has directed attention to the need of a constructive campaign by those in charge of governmental affairs."

And then we learn that "business men need to be encouraged and to be reassured concerning the disposition of the federal government to extend a keeping hand."

That is exactly what the government is trying to do—to help the small fellow to give him some hope of being more than a hired man.

What a truly patrician statement—that a helping hand should be extended to big business.

That is exactly what the bank is talking about—big business—not small business.

"The country is in shape to do a good business if those in control of great enterprises are encouraged to believe that Washington is really interested in promoting improvement."

Of all the foolish suggestions this is the limit.

Naturally Washington is vitally interested in improvement, for only on improvement can they continue in office.

It sounds like the statement of a political boss that the other fellows are trying to ruin the country.

"With the prospects of unprecedented crops and a practice of numerous economies, the time is ripe for a revival in business; but that cannot take place when politicians turn things upside down and propose really revolutionary changes."

And then we learn that "everything is at rock bottom and there has seldom been a time when the country was so free from speculative success."

What better time exists to perform the operation—the patient's stomach is empty, he is feeling strong. Surely it is no time to postpone the anti-trust operation.

"Between $250,000,000 and $300,000,000 will be paid out in half yearly dividends and interest.

"Whether the money will be reinvested or not depends upon the growth of confidence and the development of conditions which will promote better times.

"It is just as unnatural for the average American to be pessimistic as for the average man to be ill."

Yet it seems natural for the big bank to be full of it—to be a Tory—to let well enough alone—just as the Tories of 1776.

To gloss over boils and excrescences, to ignore cancers and other insidious details, which will sooner or later gnaw their way to the top—unwilling to take a chance on general improvement just as the French nobleman did prior to the French Revolution.

It seems that finance and aristocracy go hand in hand when it comes to popular demands for Magna Chartas and other concessions to the weaker vessels.

And then the bank glories in the Shreveport decision by the Supreme Court of the United States:

"The Shreveport decision will have an important effect upon curbing the ambitions of state commissions in cases where it is clear that forced reduction of rates within a state are unfair, compared with rates charged between interstate points where the distance is about the same."

"Some such decision as this has been needed for some time since the roads have been at the mercy of 48 state commissions, each with a record to make for its own territory."

How conflicting are things anyway. It is generally thought that commissions were created to protect the interests, because the interests get 90 per cent of the decisions, which they usually deserve, too. It even takes courage for the commissions to do it, too.

It is hardly fair to create the impression that state commissions are unfair.

No railroad or public utility would consent to the abandonment of the state commission, on sober thought.

It is plain that big business is wagging the banks, instead of the banks wagging big business.

It is natural enough for the big banks to sympathize with big business.

The average depositor in the big banks of Chicago has nearly $9,000 on deposit all the time.

When it is seen that these banks have thousands of depositors depositing salary checks and checking against those relatively small amounts, it is plain that they have depositors who carry from $100,000 to $1,000,000 or more, and naturally can make greater profit on the larger deposits.

Hence their natural sympathy for the down trodden (?) trust magnates and their pessimism in spite of record breaking crops.

If business were so entirely gone, why has the Pennsylvania Railroad recalled its employes, and ordered 84 locomotives to be built by Jan. 1?

It looks suspiciously as if the railroads and other industrials have tried to influence the 5 per cent. freight raise by rather inhuman methods.

There is no question that the trust bills will be modified slightly just as the currency bill was. No great wrong will be done even to those who deserve it.

Why was it that the currency bill was so cruelly denounced before its passage and so sweetly accepted after it passed?

There is something like deception in this attitude before taking.

Did you read of the Uniontown bank down in the southwest corner of Pennsylvania, that paid a 700 per cent. cash dividend last week?

Do you know what dividends your banks pay?

I will wager that you will find them making more money than your telephone company.

You will find that each director for the banks in your town is an individual optimist in his individual business,

but is a pessimist the very moment he sits in a meeting at the bank.

When you get into analysis, most men will be found to have the Jekyll-Hyde combination in their make-up.

For my part I never saw the telephone industry in such satisfactory shape.

The proposed anti-trust legislation is going to work benefit to the entire business.

While it will involve possibly some changes in American Telephone and its relations to its subsidiaries and particularly its manufacturing branch, it will not involve a dollar's worth of harm to them.

In the long run it will bring about a spirit of hearty co-operation which will be found very necessary to the life of telephone matters as a private enterprise.

Every telephone man should urge his senator or congressman to proceed with the anti-trust legislation—and to do it at once.

President Wilson will not wait for an election. It might change the political complexion of the house and spoil his program.

He is wise in pushing it through now so that the following years of his administration will give the people a chance to study his party's real fitness for another term.

But the principal thing is to complete the operation in spite of banks, railroads and insolvent dry goods trusts.

The patient is in excellent condition for the operation. By all means don't remove him from the operating table.

If what the Chicago bank says is true that we are on bed rock, free from speculation, fully liquidated, then no better time will ever exist to complete the operation.

Moral—Do it now.

The Possibilities of Wireless Telephony.

A London correspondent of the Chicago Tribune recently visited Eaglehurst, the beautiful residence of Marconi at Fawley, near Southampton, and interviewed the famous wireless expert as to the possibilities of wireless telephony.

The old tower formerly occupied by the governor of Calshot castle, standing on a big lawn fringed with pine trees overlooking the Solent, with the famous yachting center, Cowes, opposite, has been equipped with special apparatus to enable him to conduct his experiments, states this correspondent. From a mast on the tower to another at Eaglehurst, which old world house looms 100 yards away, runs a single wire which, if Marconi's expectations are realized, will enable him to catch the invisible voices of friends in London in a few weeks' time and in America before the end of the year. Here amid ideal surroundings the inventor can draw inspiration from nature and her elements. Marconi is not loquacious about wireless telephony, answering questions with great courtesy, but with cautious brevity.

"We have been trying the apparatus between London and Chelmsford—then it will be tried between London and this house, also, I think, between here and America. The installation here has been put up specially for these experiments. We have received telegraph messages already from Glace Bay, Canada, and Coltano, Italy. At the moment the telephony apparatus is not quite ready, but we hope in a few days to test it between London and here."

He was asked what would be the charge for wireless telephoning to America. "I have no idea whatever," he said. "They charge 10 shillings for three minutes to Paris, I think we should be able to charge more. You will find many people ready to pay; but it is more the achievement that I am interested in than in getting money out of the people. I suppose it is a question of supply and demand. I am certain there would be considerable demand. Wireless telephony from London to Paris could be done now, but there is a cable telephone. To America you cannot telephone at all. I do not think that one station can be used for simultaneous telephoning and telegraphing unless some new invention is made. Up to the present time I have been devoting myself almost entirely to telegraphy. Now I'm going to complete the telephony. Last March I carried out a number of experiments between ships in the Italian navy, and I am satisfied with my progress.

"There are 16 cables across the Atlantic, but you cannot hear one word. It may be sooner than the end of this year that we shall be able to telephone to America. I do not say that it will be a public service, but I think it will be possible for privileged persons."

The inventor was asked what would happen if New York called London when London was calling India or Buenos Aires. "You could not do it unless you had one station exclusively for America and one for India, and, again, another for Buenos Aires, so far as we can see," he replied.

Marconi, replying to further questions, explained that there are no physical objections to an American millionaire having a private installation between his home and his office, but regarding an installation between any firm's London and New York offices he said:

"Probably stations would have to be outside London and New York, but a man could speak from his office on a wire which would go direct into the instrument at the station and then into space."

"Then it would be possible for a voice to go through space into an instrument at the other end, thence by wire to New York without retransmission by some one else at the station?" he was asked.

"Yes," said Marconi. "I do not anticipate any difficulty with that. Our chief difficulty at present is to get sufficient power controlled by the voice. You see, if you are going to speak for a long distance you must have big power to get there. Well, this big power must be controlled by the voice. The power necessarily increases for distance, but I cannot say in what ratio—probably in more than a direct ratio. Once this difficulty is overcome progress will be very rapid."

Asked if he thought wireless telephony ever would be more popular than telegraphy, he said:

"I don't know that the telephone has destroyed the telegraph. There are a great number of communications using a code cipher which could not be sent by telephone. They can more accurately be sent by telegraph."

When asked if private stations could overhear conversations, Marconi replied: "Yes, if they pick up the wave, but I do not think that legislation will be necessary. You can overhear things sometimes on the ordinary telephone."

Regarding the cost of experiments to date Marconi was unwilling to give figures, but admitted that $50,000 had been spent. He added that night is better than day for conversation, and that women's voices are heard equally as well as men's, but that Italian is better than English, probably because most of the Italian words are vowel.

Free Toll Service to Secure Harvest Hands.

The Arkansas Valley Telephone Co., of Great Bend, Kan., showed its public spirit by granting free toll service during June to certain city officials and commercial clubs in cities in the western portion of its territory for the purpose of securing harvest hands for farmers located in that territory. Permission to grant such free service during June was secured from the Public Utilities Commission of Kansas.

The Manufacture of Rolled Condensers for Telephone Use

Development of Condensers and Materials Employed—Parrafine, Tinfoil and Paper used in the Built up Condenser—Cost of Hand Process of Making Prohibitive—Assemby of Condensers by Machinery and Treatment after Winding.

By W. C. Freeman

The earliest type of electrical condenser known to science was the Leyden jar, the design of which has remained practically unchanged to the present ime. This type of condenser still has many uses, such as transmitting capacity for smaller wireless sets, standards of capacity, etc.; but the principal objection to it for commercial usage is its large size for a given capacity.

The next development in the course of time was the built-up condenser consisting of alternate sheets of tinfoil and glass or mica, which made a more compact and convenient condenser. For lower working potentials ranging from 0 to 1,000 volts, a condenser of this type, using a good grade of paraffined paper, will give entire satisfaction. The specific capacity of paper impregnated with paraffine is somewhat lower than glass or mica, but as paper can be obtained in thinner sheets, the lower specific capacity is more than offset by the closer association of the plates of opposite sign. The specific capacity for the various dielectrics commonly used in commercial practice is about as follows:

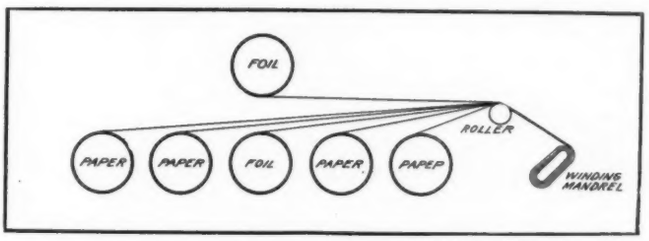
Dry air	1.00
Extra dense flint glass	9.90
Dense flint glass	7.38
Light flint glass	6.70
Crown glass	6.96
Plate glass	6.10
Mica	4.60 to 8.00
Paraffined paper	2.8 to 3.80
Hard Rubber	2.70

Built-up condensers are expensive to manufacture regardless of the dielectric used, as all of the work of assembly must be performed by hand labor. A skilled workman can only build by hand a capacity of about two microfarads per day. For many purposes, such as in telephone work and in certain classes of radio-telegraph apparatus, the cost of built-up condensers would be prohibitive. To meet this demand, rolled paper and foil condensers are generally used.

The principal materials, employed in making the rolled condenser proper, are tinfoil, paper and parraffine. The paper used in nearly all condensers is commercially known as "rice paper." Most of it is of domestic make, although some special grades are imported. It is white in color, very flexible, of high tensile strength and very tough, with a hard glossy finish. It is without question one of the finest papers made, since the requirements are that it shall be free from all foreign deleterious substances and, furthermore, from the minutest holes which are not readily discernible by the naked eye. Condenser paper is purchased in several thicknesses varying from .0005 to .001 inch. It is put up on rolls of different widths, depending upon the finished dimensions of the condensers for which it is intended.

The "tinfoil" employed is not tinfoil in the narrow sense of the word, but a foil made from an alloy consisting of about 90 per cent. lead and 10 per cent. tin. Such foil cannot be accurately gauged by thickness but some idea can be gained from the fact that one pound of this foil will cover about 18,000 square inches of surface. In the praparation of foil, great care is taken to insure the purity of the product and freedom from grit, which would puncture the condensers when assembled and pressed. The foil, used with a given width of paper, is somewhat narrower to guard against contact of the edges of the adjacent turns. It is put up in continuous lengths on spools in the same manner as the paper.

Paraffine is not only used in the impregnating process



Schematic Arrangement of Condenser Winding Machine.

to reinforce the insulating qualities of the paper but also to raise the specific inductive capacity of the dielectric between the plates of the condensers. The specific capacity of paraffine depends to a great extent upon its temperature and ranges between 2.8 and 3.8, dry air being considered as unity. Pure paraffine is not used in all cases owing to its low melting point, other substances being added to increase this point and to give greater hardness and mechanical strength.

The prohibitive cost of building up condensers of superimposed plates by hand under former methods, has been eliminated by machines which enable the worker to turn out 100 condensers in the time taken to assemble one in the old way. The accompanying diagram will give an idea of the arrangement of a representative type of these machines.

The machine is usually provided with six spindles arranged to carry the spools of paper and foil in the manner indicated. This scheme, it will be noted, provides for two layers of paper between the foil plates of the condenser. A mandrel of proper size for assembling the foils is shown at the right of the diagram, its size and form depending upon the type of condenser being made. These mandrels are made collapsible to permit easy removal of the partially finished condenser after the winding process has been completed.

Each spool is provided with a tension adjustment to insure compact and even rolling, and against injury to the foil, due to creasing. The lower spool of the foil is fitted with an alarm bell circuit to indicate a possible breakage of that strip of foil during the winding, since it cannot be easily seen by the operator. The upper spool is not provided with this attachment, since it is constantly under the observation of the operator. The mandrel is equipped with a revolution counter alarm device to inform the operator when the required number of turns has been made, thus insuring uniformity in the capacity of the finished articles.

The first step in the assembly of the condenser is the winding of a few preliminary turns of paper, only, on the mandrel to form a core. This is done to avoid creasing

to excess the inner layers of foil. Very thin strips of brass about ¼-inch wide and about an inch longer than the width of the foil are then attached to each layer of foil with the long end projecting to afford a means of connecting the tin foil to the terminals on the condenser case. The required number of turns to give the specified capacity are then taken, the ends of foil clipped and the paper given a few extra turns for protection against injury in handling. In some cases, the condenser terminals are placed midway in the foil strip to decrease the plate resistance and to avoid the resulting loss of power.

The condensers are then assembled in the pressing "jigs," and placed in perforated metal baskets. These baskets are immersed in a large cauldron of molten paraffine, a cover placed on the tank and the air exhausted until a certain vacuum is reached. This expels every trace of air and moisture from the condenser and allows the paraffine to flow freely into the interstices so that a perfect impregnation takes place. After remaining in the tank about one hour, the gibs containing the condensers are removed and placed in an hydraulic press where they are subjected to heavy pressure, varying from .5 ton for certain condensers to 12 tons as a maximum for others. This process removes all excess paraffine and brings the plates together as closely as is possible. Before removal from the press, the jigs are locked by means of wedges and then set aside to cool thoroughly.

The partially completed condensers are now tested for capacity and insulation resistance at a voltage of at least double the working voltage. Any defective ones found are discarded before further time and money is spent upon them. The usual container consists of a can made from block tin with all seams soldered or welded to render the case moisture-proof. The containers are lined with pasteboard, the condenser placed in position and the case filled with paraffine. The terminals are next placed in position and the cover soldered on, after which a further test is made to check the capacity and insulation before placing in stock for shipment.

The Telephone in Flume Operation.

The Forest Service of the United States Department of Agriculture has just issued an extremely interesting bulletin devoted to a discussion of the use of flumes in lumbering operations and telling how these artificial waterways are constructed and operated in the transportation of logs, ties and other timber from the forests where they are cut to railroad landings.

The use of the telephone as a valuable adjunct to flume operation is described as follows:

"The use of the telephone in connection with fluming operations has been found a very necessary and valuable adjunct by its assistance to the operator in a great many ways. By its use it is possible to know just what is going on at the different points along the flume where 'stations' are maintained, and notification of a serious jam or break in the flume can be quickly transmitted to the head of the flume and the shipping of material stopped. Otherwise it might be continued for a considerable length of time or until it was possible to get word to the upper end of the flume, and before this could be accomplished and the shipping stopped the break or block might become of such magnitude that to get the material back and repair the flume would cost almost as much as installing a telephone system.

Telephone wires have sometimes been strung along and attached to the sides of flume construction, but this method is not considered generally satisfactory, as there is always the danger that when the flume becomes jammed or is broken down, the line may also be put out of commission at the very time when its assistance is most needed. It is generally more advisable to have the telephone wire strung on independent poles or convenient trees where the line runs through a forest than to have it attached to the framework or sides of the flume.

By the use of the telephone it is possible to notify the shipper at the upper end of the flume what class of material to ship, when to ship it, and to keep in touch with what is going on along the flume line at all times. If there be a mill operating at the upper end of the flume, it is often very important that the employes at both ends of the line know exactly what class of material is going to be handled, since for a certain length of time one class might be going to a railroad landing to be loaded onto cars for shipment, after which for the remainder of the day a class of material might be shipped that should be turned by a switch into the storage pile, or vice versa. The valuable aid in fluming operations obtained through the use of the telephone usually makes its installation as an integral part of the plant most advisable."

Heroism of Two Texas Operators in a Fire.

Another story of coolness and bravery by telephone operators in time of danger is recounted by the Southwestern Telephone News in connection with the story of a fire at Mt. Pleasant, Texas, that burned half the building in which the exchange of the Southwestern Telegraph & Telephone Co. is located in that city.

At the Mt. Pleasant exchange the two night operators sleep in the switchboard room and are awakened for calls by a loud bell over the switchboard. Rosalie Eakin and Lillian Parsons are the operators at this place. The smoke and heat awakened them and they got up without scream or fuss or flurry and went calmly to their switchboard to call the town to save the building.

The fire had a good start and burned fiercely. Men rushed to and fro and yelled and fell over each other. The sparks were flying and all the excitement of the fire conditions prevailed.

When it became known that these two girls were sticking to their switchboard their example steadied the fire fighters and the work of saving the building became more effective.

It was only when the wires burned in two and the smoke became suffocating to the point of real danger that the girls would leave the building.

Half the building was burned. Hard work saved the telephone offices from entire destruction. One span of the main lead was burned and 700 telephones put out of commission. The material and repair crew from Dallas arrived on the scene while the ruins were still smoking and had the service restored within 24 hours.

Municipal Ownership Successful Says Edmonton Mayor.

Contrary to reports that have come from Edmonton, Alberta, Canada, W. J. McNamara, mayor of that city, who recently visited New York City, declared that municipal ownership had proved an absolute success in Edmonton. In reference to the telephone system he said.

"In Edmonton we have a splendid system, with automatic switchboard, and 11,500 connections. These pay all the way from $20 to $50 a telephone lower than in any city in the United States. We have no pay stations. Altogether Edmonton, in spite of the fact that we have come in for a great deal of criticism and of charges that we have fallen down on municipal ownership, is a great vindication of the practicability of that and of the single tax. As for municipal ownership, I believe that it is the only solution for preventing graft and favoritism and getting the greatest efficiency out of public utilities."

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Suit to Test Michigan Physical Connection Law.

The Michigan Railroad Commission has been served with a notice of a suit started in the Wayne county circuit court by the Michigan State Telephone Co. asking for an injunction to restrain the state body from enforcing its order of June 11, in which a physical connection of the Bell and Citizens telephone companies at Traverse City was ordered by the commission.

In its bill of complaint the Michigan State Telephone Co. asked that the act passed by the 1913 session of the legislature, under which the railroad commission issued its order, be declared null and void, so far as the physical connection clause is concerned. The railroad commission will defend the order and eventually the case will be decided by the supreme court.

The Michigan State sets up several reasons why the act is void and the commissioner's order unjust. First it contends that public convenience at Traverse City did not require the issuance of such an order, that the Michigan State stood ready to furnish toll line service to the city, that there is no point of any consequence that cannot be reached from Traverse City over the lines of the Bell, that a physical connection order will injure the business of the local exchange of the Bell and that the order if placed in effect will destroy to a certain extent outside business of the Bell, and will eventually destroy its business locally.

Other arguments are that the order of the commission does not provide for compensation for losses sustained by making the connection; that the order means taking property without due process of law and is a violation of the United States constitution.

There will be no physical connection at Traverse City until such time as the courts decide the constitutionality of the act under which the order was issued, says the railroad commission.

Metered Service Prospects in Detroit.

A dispatch from Detroit, Mich., states that the "argue squad" employed by the Michigan State Telephone Co. to go out among the subscribers and explain in detail the proposed metered schedule for Detroit telephone lines, has been given other work in the commercial department. The petition for permission to put in use the metered schedule will not be presented to the Michigan Railway Commission until late in August.

Accountants are still at work on the inventory of the company's business and appraisers are preparing the statement of property acquired by the company. The refusal of the commission to accept the statement of the acquired property appraisal in a lump sum forced the company to put to work a dozen appraisers to prepare a detailed report to be included with the petition.

Classification of Accounts in New Hampshire.

The Public Service Commission of New Hampshire has prescribed a classification of accounts for electric utilities effective July 1, 1914. Similar orders effecting gas, telephone and water utilities are still under consideration, but will probably be issued within a short time. The text issued for electric utilities classifies the companies into four groups on the basis of their gross earnings. In adopting this grouping provision has apparently been made for all sizes of companies. A system of accounts has been assigned for each class. For the smallest companies, embracing those which have been grouped as having annual earnings of less than $3,000, there has been provided a very much condensed set of instructions as an appendix to the regular rules.

Would Have Utilities Support Commission.

Governor Walsh of Massachusetts recently sent a special message to the legislature reiterating a recommendation that he made in his inaugural address that the state be relieved of the expense of the Public Service Commission. A bill which accompanied the message provided that the amount of money annually appropriated by the general court for the salaries and expenses of the commission should be apportioned by the tax commissioner among the railroad, railway, steamship, telegraph and telephone companies under its supervision and regulation. The message and bill were referred to the committee on railroads.

Duplicate Service Discontinued in Helena, Mont.

The Helena Automatic Telephone Co., of Helena, Mont., which was acquired by the Mountain States Telephone & Telegraph Co., has announced suspension of operations, following an agreement by business men to discontinue paying the Bell company for duplicate service.

Interlocking Directorates in Chicago.

Interlocking directorates of the public utility companies of Chicago are dealt with in a report by Montague Ferry, recently appointed commissioner of public service by Mayor Harrison. The report names six men, headed by Samuel Insull, president of the Commonwealth Edison Co., as factors in control of the public utility situation. Each is listed as an officer or director in two or more of the corporations furnishing electric light and power, gas, traction and telephone service.

Those named with Mr. Insull are Henry Blair, financial head of the Chicago surface lines; Ira M. Cobe, of the City Railway; B. E. Sunny, president of the Chicago Telephone Co.; John J. Mitchell, president of the Illinois Trust & Savings Bank; and James A. Patten, retired Board of Trade operator. Mr. Ferry prepared his report in response to a council order, introduced by Alderman C. E. Merriam, and it will be taken up by the committee on gas, oil and electric light in the fall.

Proposed Merger at Waco, Texas.

As a result of the agitation for a consolidation of the Bell and Independent telephone systems in Waco, Texas, since the resolution adopted by the city commission ordering the two companies to merge, negotiations have taken place between the companies which indicate a possible consummation of the merger. It is stated that J. E. Farnsworth, vice-president of the Southwestern Telegraph & Telephone Co., has agreed to sell the company's property in Waco to the Brazos Valley Telegraph & Telephone Co., the Independent system. Gen. A. P. Wozencraft, general counsel for the Southwestern company, is quoted as stating that the sale can only be legally made if authorized by the people of Waco.

Physical Connection Suit in Ohio.

The Farmers' Mutual Telephone Co., of Carroll County, Ohio, has instituted proceedings in the common pleas court against the Eastern Ohio Telephone Co. alleging that the lat-

ter, which purchased the property of the Minerva Telephone Co., of Minerva, Ohio, with whom the Farmers company had a contract for free interchange of service, refuses to carry out the terms of this contract. An order is requested requiring the Eastern Ohio Telephone Co. to re-establish physical connection.

An Ohio Tax Decision.

The supreme court of Ohio has rendered a decision which sets aside the instructions of Governor Cox and the Ohio state tax commission requiring local assessors to appraise incorporated companies other than public utilities on the basis of their capital stock and their value as going concerns. Affirming decisions of the courts of Butler County in a case involving the taxes of the Champion Coated Paper Co., of Hamilton, the supreme court holds that appraisals of private corporations must be based on the value of real estate and personal property alone. Good will, "going value" and other intangible values cannot be considered.

In its journal entry the supreme court distinguished between public utilities, which are valued on their gross earnings as going concerns, and private companies, since the latter are conducted purely as private business and enjoy no franchise of public monopoly.

Litigation Over Los Angeles Rates.

Applications for restraining orders to prevent the city of Los Angeles, Cal., from enforcing the low schedule of telephone rates that have been in force for the past two years were filed recently in the United States District Court at Los Angeles, by the Pacific Telephone & Telegraph Co., and the Home Telephone & Telegraph Co.

Michigan State Company Announces Collection Policy.

In adopting the plan of billing subscribers at Port Hudson, Mich., monthly instead of quarterly, the Michigan State Telephone Co. announces the following policy:

"Although the plan of monthly billing involves an additional expense on the part of the telephone company, as it requires the preparation of 12 bills instead of four, it is the company's desire to adopt the method most satisfactory to the majority of its subscribers. It has, therefore, been concluded that the interests of the subscribers and the company can be best served by mailing bills monthly and allowing the payment to be made at any time within the first 15 days of the month. As no collector will call, payment should be made at the company's central office, or by check."

Commission Reports Issued.

The sixth annual report of the Railroad Commission and the third annual report of the Public Service Commission of the state of Nevada, for the year ending December 31, 1913, has just been issued in a volume of over 400 pages. In this state the railroad commissioners are ex-officio members of the Public Service Commission. Not more than a half dozen telephone cases are reported for the year.

The seventh annual report of the Railroad Commission of Oregon, for the year ending December 31, 1913, which has also just been issued, is a volume of 260 pages. Of the telephone cases brought before the commission 18 involved rates and 29 involved service.

The Michigan Railroad Commission has issued its report for the period from January 1, 1914, to March 31, 1914. The volume embraces the orders and opinions of the commission during that quarter.

Another annual report just issued is that of the Public Utilities Commission of Rhode Island for the year ending December 31, 1913. The telephone complaints adjudicated by the commission were few in number.

Topeka Seeking Judgment of Automatic Users

Under instruction from the Topeka Industrial Council, Clyde, O., Tresner, its secretary, is sending letters to subscribers of automatic telephones in a number of cities. Tresner first addressed the officials of the telephone companies and procured the last issue of their telephone directories. Selecting names at random from the directories he is preparing a list of business firms and private individuals from whom he hopes to procure an unbiased opinion of the value of the automatic telephone.

Pennsylvania-New York Joint Association Meeting.

The 23rd quarterly meeting of the Western Pennsylvania Independent Telephone Association will be held at New Samuel's Hotel, Jamestown, N. Y., on July 24 and 25. This will be a joint meeting with the New York State Independent Telephone Association.

The Tri-State News.

The first issue of the Tri-State News, published at Corinth, Miss., has been issued. It is published in the interests of the Independent companies belonging to the Tri-State Independent Telephone Association, by W. N. McAnge, Jr., secretary of that association. The Tri-State News is issued in newspaper form and the first number consists of four pages 12x17½ inches in size. An interesting article in this issue is a contribution by B. A. Grant, auditor of the Allen properties entitled "The Use of System Boots Collections." An illustrated article on correct tree trimming is another valuable feature. The editorial page contains a number of live editorials, and one page is devoted to advertising. The first issue of the Tri-State News is a creditable one and will be a benefit to all companies receiving it.

Proceedings of Tri-State Association.

The proceedings and papers presented at the seventh annual convention of the Tri-State Independent Telephone Association at Jackson, Tenn., on May 19 and 20, 1914, have been published in pamphlet form by the association.

New York Commission Suspends Recent Order.

The Public Service Commission of New York has rescinded its recent order by which the New York Telephone Co. was compelled to cease granting certain rates which the commission considered discriminatory. The withdrawal of this order at this time is due to the fact that the original order was so broad in its premise as to comprehend cases which the commission did not contemplate reaching.

The original order was aimed at the practice of giving free or reduced rate telephones to favored individuals in certain localities, such as village, town and city officials. The original order was so phrased, however, that the telephone company was enabled thereby to insist on the raising of a large number of rates throughout the state effecting considerable hardship on telephone users. The telephone company, as an instance of this, in one community where it had less than 5,000 subscribers, served notice that the rates in 1,900 cases would be raised. The original order of the commission contemplated reaching only a dozen or less cases in this community. The following statement was made by the commission with regard to rescinding its order:

When the Commission made its recent order requiring telephone companies in New York State to terminate preferential contracts and to charge all their patrons the same rates for similar service in accordance with filed schedules,

the primary purpose it had in mind was to put an immediate end to certain abuses which have grown up in connection with the granting of local telephone franchises throughout the state.

It has been customary to incorporate in such franchises provisions for free telephone service to a large number of local officials, and the practice seems in some cases to have been stretched so far as to give rise to the suspicion that a large number of people, prominent in their several localities, are enjoying free telephone service in return for assistance which they were able to give the companies in obtaining their local franchises. Whether or not such a suspicion is justified, it seemed to the Commission that in fairness to the public at large the practice of more or less indiscriminately giving free telephone service to local officials throughout the state should be stopped.

In making our order we had in mind also the speedy termination of certain preferential contracts which were plainly illegal, and for permitting the continuance of which the telephone companies are probably liable under the law to the imposition of penalties by the state. With these obvious instances of improper practices in mind, the commission felt justified in moving in the matter as it did in somewhat summary fashion.

No hearings were held prior to the making of the first order. Since its promulgation, however, it has come to the attention of the commission that the scope of the order was so broad as perhaps to include a large number of cases where those effected by the ruling should in fairness at least have an opportunity to be heard. Moreover, we have already found that, in the case of several companies, suspension orders covering periods of as much as six months, in some cases, will apparently have to be made on account of special circumstances which would prevent any earlier compliance with the commission's first order.

For these reasons, and for the further reason that the pending investigation into the rates for telephone service in New York will afford an excellent opportunity to take up questions of this kind in an orderly way, the Commission has decided to suspend for the present the operation of its order in cases of alleged discrimination and preference.

The order of suspension also directs the telephone companies to file with the commission additional information respecting all such cases. A requirement of this kind was incorporated in the first order, but it is now somewhat amplified, and in its present form will enable the commission to eventually make an order that will stop the unlawful practices against which the first order was directed without doing any incidental injustice to other telephone users.

Summary of State Commission Hearings and Rulings.

Illinois.

July 14: Hearing of case of Postal Telegraph-Cable Co. of Illinois vs. Chicago Telephone Co., at Chicago; complaint as to refusal of Chicago Telephone Co. to make connections, give sufficient service, etc.

July 15: Hearing at Chicago in case of telephone subscribers at Crete, Ill., vs. Chicago Telephone Co., on complaint of discrimination in telephone rates.

July 10: Wabash County Mutual Telephone Co. given permission to increase capital stock to $5,010.

July 10: Patokia Telephone Co. of Patokia, Ill., given permission to discontinue combination rates for residence and office after August 1.

Indiana.

July 14, 15: Hearing at Princeton, Ind., on petition of Cumberland Telephone & Telegraph Co. for an equalization of rates as between pioneer and new subscribers of the company.

July 28, 29: Postponed hearing at New Albany on petition of Cumberland Telephone Co. for a readjustment of rates.

July 30, 31: Postponed hearings at Jeffersonville, Ind. on the application of the Cumberland Telephone & Telegraph Co. for an equalization of rates in the Jeffersonville district.

Kansas.

July 3: Hearing at Cedar Vale respecting rural rates of the Missouri & Kansas Telephone Co. at that exchange. Lack of uniformity in rural rates was alleged, rates of $5, $6 and $8 being charged. The application was for restoration to the $5 rate and for a refund of $1 each to all who have been paying $6 for service that some subscribers have had for 5.

Missouri.

Case 268: Application of Enterprise Telephone Co., for certificate of convenience and necessity for physical connection with the long distance lines of the Missouri & Kansas (Bell) Telephone Co. at Boonville, Mo. Denied June 29, 1914.

Case 402: Application of the Liberty Telephone Co., of Liberty, Mo., for order approving plan or reorganization, certificate of necessity and authorization of issue of stock. Order dismissed without prejudice, June 29, 1914.

Case 410: Application of Miss Cordelia Lusby for certificate of necessity and convenience to establish local exchange at Wentzville, Mo. Granted June 22, 1914.

Case 407: Application of Missouri & Kansas Telephone Co. for permission to close its local exchange at Grandview. Granted June 11, 1914.

Case 406: Application of the Southwestern Telegraph & Telephone Co. (Bell) for authority to lease certain long distance circuits of the American Telephone & Telegraph Co. in eastern Missouri. Granted June 22, 1914.

New York.

July 3: Application by Rochester Telephone Co. for authority to issue general mortgage five per cent bonds at par for an amount not exceeding $100,000.

July 8: Order requiring the New York Telephone Co., on or before July 20, to establish a rate of $33 a year for multi-party residence service within the Solvay, N. Y., central office district and outside of the Solvay base rate area.

Ohio.

July 6: Application by the Harrison & Jefferson Telephone Co., of Cadiz, Ohio, for adjustment of its toll relations with the Central District Telephone Co.

July 8: Hearing held on the application to merge 19 telephone companies in Ohio into the Ohio State Telephone Co.

July 9: Statement filed by attorney for complainant subscribers at Chardon, Ohio, covering an examination of the books of the Chardon Telephone Co. following an application by the company for increased rates. The complainants declare that the company has been prosperous and does not need the increase. The report states that the company has paid dividends regularly on all stock outstanding, has discharged an indebtedness of approximately $9,000 in four years, retired $2,500 preferred stock and closed each year with a surplus of from $2,000 to $4,000.

Wisconsin.

July 24: Hearing at Princeton in the investigation, on motion of the commission, of bridged telephone service to individual subscribers at Princeton.

No. U. 285: Order in previously reported case of the Arena & Ridgeway Telephone Co. vs. the Troy & Honey Creek Telephone Co., Dodgeville & Wyoming Telephone Co., West Spring Line, and Big Hollow Telephone Co. in which the commission approves respondent companies' charge of $1 per telephone for switching service to a farm line owned by complainant but requires respondents to share in the expense of a trunk line maintained by complainant.

No. U. 287: Order requiring physical connection in the case of N. H. Johnson et al. vs. the Redfield Telephone Co., and the Fremont Telephone Co.

No. U. 288: Order in the previously reported investigation of the commission of the alleged violation by the Lisbon Telephone Co. of the law requiring application to be made to the commission for a certificate of convenience and necessity before building a line. The extension in question was held to be unnecessary and while the commission apparently had no authority to compel the company to discontinue the service, failure to discontinue it would render the company liable to prosecution.

No. U. 290: Order in the previously reported case on the application of the Troy & Honey Creek Telephone Co. for authority to increase rates, authorizing adoption of a new schedule and specifying conditions, improvements in service, maintenance and accounting.

No. U. 291: Order in the previously reported case of the Ettrick Telephone Co. vs. the Western Wisconsin Telephone Co., and the La Crosse Telephone Co., dismissing complaint of discriminatory rates.

No. U. 296: Order holding that public convenience and necessity do not require extensions proposed by the West Kewaunee & Western Telephone Co.

Practical Subjects—Letters and Discussions

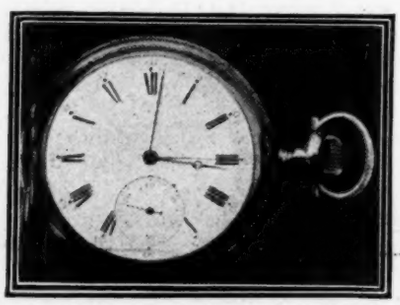
New Scheme for Beating the Company.

A peculiar case of defrauding the company, says the Pacific Telephone Magazine, was recently brought to light by the Spokane Riverside chief operator. A subscriber who has a measured service telephone called a subscriber having a private branch exchange, and after the connection had been up for over half an hour an investigation was made. It was found that the calling subscriber was giving numbers to the boy who was operating the exchange switchboard, who was completing the calls by asking the Pacific Telephone & Telegraph Co. operator for the desired number and, after getting it, putting up the connections so that the calling subscriber could converse with the person whom he was calling.

By this means the first subscriber was able to complete a number of calls and at the same time only be charged up with the one to the private branch exchange. It appeared that the subscriber, after having used the minimum of calls, had been calling other subscribers in this manner in order to avoid paying the excess on each individual call. The matter was taken up with the subscriber having the private branch exchange, who assured the company that he would see that this practice was not continued.

An Easily Made Timing Device.

Here is a home-made timing device which will practically take the place of a stop-watch, says F. K. Singer in The Telephone News. The crystal of the watch is loose enough to turn in the mounting, and has marked on the underside a black line. At the start of the period to be timed, the crystal is turned until the line coincides with the minute hand. As time goes on, the hand moves away from the



Watch Crystal Showing Timing Method.

mark and the elapsed time can be noted by a glance at the dial.

For most jobs, timing to the quarter-minute only is necessary, and the only useful feature of the stop-watch is its not requiring two figures to be set down and a subtraction to be made. The same results are secured by this method with practically no more labor and at no expense, and the device is always on hand and ready for use.

Employe Advertising.

It has been proved, says Will J. Brock in a contribution to the Bulletin of the Federal Telephone & Telegraph Co., of Buffalo, N. Y., that the easiest and most direct way of advertising is through the co-operation of the employes themselves. This is the advertising that brings results, because it reaches the public direct and leaves room for discussion on all intricate points. Simple isn't it? Occupies very little time but proves great for the organization.

While primarily addressing the employes of the Federal company Mr. Brook's words will interest the employes of other companies as well. Continuing, Mr. Brock said:

Thousands of dollars are spent every year by the Federal company in advertising its service to the public. Newspapers, sign-boards, street cars and magazines all furnish excellent opportunities for the placing of these advertisements but in the majority of cases advertisements are passed over for something more interesting. How then is the majority of the public going to become acquainted with this company? How are they going to learn the advantages of Federal service? How are they going to know the security of our seven per cent. stock? Mr. Employe it is up to you to do this.

While on an Elmwood car the other morning I became interested in the conversation of two gentlemen sitting directly in front of me. Their topic of discussion was the automatic telephone, its advantages where it was in operation, and if it would be successful in Buffalo. This was discussed in a very proper way and demonstrated that both these gentlemen had at sometime used the automatic. Then I was very much surprised to hear one of the gentlemen remark that he thought it very strange that the New York Telephone Co. would install the automatic in Buffalo so soon after the completion of its new telephone exchange at Church and Franklin streets. At this remark I became very perturbed and at once leaned forward to correct the statement as made by this gentleman. My interest in the matter was welcomed with all respect.

After informing both gentlemen that the Federal Telephone & Telegraph Co. and not the opposition company, was installing the automatic they seemed more than pleased and remarked that they were delighted to know that the Federal company had used such excellent judgment in installing the automatic. In their own words, "It is the only kind of telephone service for enterprising cities."

This little interview is only one of many that tend to create a better feeling between the public and the company. You have possibly met some person in the same way and discussed some point with him that he was absolutely ignorant of. After setting him right you felt you had accomplished a great deal. Keep it up. Let it become a habit with you.

During my interview with these two gentlemen I had turned them about and started them off on a new track. They went on their way with new ideas of the Federal company. Brighter prospects for the success of the company appeared before them. On, on and on these ideas will go from friend to friend all along the line, each one making use of the other fellow's knowledge, until all the community will resound with the name of Federal.

It's simple isn't it?

Have you tried it?

Let's start right now and talk nothing but Federal, every minute, yes every second. You'll like it because you are a part of it. Swell out your chest and be proud that you are a part of this great organization. Talk, talk, talk Federal all the time. When you are at the office, in your home, at the club, on the train, in the hotel, in fact everywhere talk Federal Telephone & Telegraph Co.

If you do this you are benefiting yourself as well as the company, for does not the public form its opinions of a company by the class of men employed. I think it does, so it is up to you to look after the affairs of the company precisely as if they were your own.

Get busy everybody and put lots of "pep" into your work and just see if you can be the leading member of the "Employee Advertising" campaign. It is well worth trying, does not cost a cent, but the returns will reward your ef-

forts and prove to you that the public likes a "booster" and not a knocker.

Be of service to your company as well as your fellow men.

Telephone Installation in a Chicago Skyscraper.

The Chicago Telephone Co. has completed the feat undertaken a little over two years ago, of supplying the new Continental Commercial National Bank Building, of Chicago, 21 stories high, the largest building in the United States, outside of New York City, with a telephone system adequate to serve ultimately 10,000 telephones.

Within this palace of finance and commerce, says the Bell Telephone News, has been built a modern telephone city. It has 1,000 more miles of telephone wire than Colombia, with a population of 4,500,000 and a land area of 438,000 square miles. At the present time there are as many telephones in use in this building as there are in Portugal, a nation of 6,000,000 people, outside of two or three cities whose combined population is 500,000.

The system of wiring in the building is known as the direct feeder, bridged feeder and house cable system. By bridge feeding is meant those trunk lines which do not appear on the 10,000 line distributing frame in the basement, but which run direct from the Wabash exchange to the floor terminals in the building. Bridged feeder lines are trunks which appear on the main frame and also at the floor terminals so that connection or cross-connection may be made at either the floor terminals or main frame. The third class includes two sets of cable; those which run between floor terminals and the main frame, which may be cross-connected for inter-communication; and a set of trunk lines from the Wabash office which terminate in the main frame, to which lines in the house cable may be connected. Two 600-pair underground cables enter the building through a four-duct conduit, leaving capacity for two additional 600-pair cables when the need arises.

At present there is one pair of conductors for every 146 square feet of the 584,494 square feet of rentable area. In other words, there is one pair of direct feeder to 487 square feet; one pair of bridged feeder to 487 square feet; and one pair of house conductors to 365 square feet. There is a total of 1,745 miles of wire in the two 600-pair cables which enter the building and 1,024 miles of wire in the building, a total of 2,769 miles.

The first six floors and basement, which are not included in the rentable area, are to be used by the Continental & Commercial Trust & Savings Bank, the Hibernian Banking Association and the Continental & Commercial National Bank. To take care of the telephone needs of these six floors, four 50-pair house cables run to the first floor from the main frame, one 400-pair house cable to the second floor and a 600-pair cable from the second to the sixth floor where the private branch exchange switchboard will be located. There are also terminals on each floor.

All riser cables are carried upward from the basement through four riser shafts, one in each corner of the building. Above the sixth floor in each shaft the riser cables taper in size, the smallest at the top being 25 pairs. From the splices in the shafts on each floor, 25 and 50-pair cables are run laterally in conduits to the terminal boxes. There are 14 terminal boxes on each floor above the third. These terminals are built to match the woodwork of the building and are set flush with the corridor walls. Tubes are provided for carrying the wires between the corridor wire moulding and the room wire moulding.

Forty-eight private branch exchange switchboards are scheduled to be installed in the building. They include 42 one-position boards, four with two positions, one four-position board and one with six positions, a total of 60 operator's positions. Twenty-four of these boards had been installed and were working on May 1. The service furnished to these boards involves the use of 228 trunks, 950 stations and 38 connecting trunks.

The largest private branch board in the building is that of the American Steel & Wire Co. It will handle the service on the eleventh, thirteenth, fourteenth, sixteenth and seventeenth floors. It is connected with the Wabash office by 200 trunk lines and from it radiate ten 100-pair house cables.

In every respect the telephone system of the Continental & Commercial Bank Building is modern, with ample flexibility and capacity for future growth.

Peculiar Line Troubles.

Apparently there is no end to the peculiar things that cause trouble on telephone lines. Every "trouble shooter" knows there are certain places to look first and in most instances the defect is easily located and quickly fixed. Every once in a while, however, some oddity is discovered that frequently has caused a lot of annoyance. Here are some which appeared in a recent issue of Telephone Topics:

A party line in Andover, Mass., was reported out of order several days in succession and the line would come clear before the trouble could be located. Finally it was discovered that the subscriber placed her eyeglasses, when through using them, on top of the bell box, short circuiting the line at the binding posts.

At Lincoln, Mass., a subscriber had difficulty in getting central, at frequent intervals. The line upon test was found to be "open" towards the drop. Further investigation showed that a fly's wing had become lodged between the spring and and stud contact of the line jack, in such a manner as to prevent a contact being made.

It is not unusual to have subscribers complain about their line being noisy, sounding as if there were birds on the wire, and therefore nothing out of the ordinary was expected when a complaint was received from a Lincoln subscriber to this effect. It turned out, however, that in the dark, birds flew against the subscriber's drop wire, which happened to be No. 12 iron, causing noticeable vibrations in the form of a sharp report.

The firm of E. C. Crosby & Co., Brattleboro, Vt., has two special lines and recently these lines became crossed at about 3:00 p. m. for two or three days in succession. A man, sent to discover the cause, found that the stenographer would start using the typewriter about 3:00 p. m. each day, and in removing the covering from the machine, would hang it over the protectors, which are located on the wall, back of her desk. This covering, which was thought to be rubber, was cloth with a metallic paint. When the troublemen would go to disconnect the wires at the protector, of course they would remove the covering and the trouble would disappear, until the next time the stenographer would use the typewriter, when the covering would again be placed on the protector and the trouble would reappear.

Not so very long ago a subscriber in Hartford, Vt., called the chief operator at White River Jct., Vt., and stated that the telephone was in trouble and wanted it repaired at once. The troubleman visited the station and found the trouble was caused by the lady of the house, who had been dressmaking and had used the telephone cord for a pin-cushion.

Selling Goods by Telephone.

In one of its newspaper advertisements a leading New York department store gives an illustration of the value of the telephone in demonstrating as well as selling goods.

A woman telephoned to the store for a mantel clock. The kind she wanted was in stock, but the prospective purchaser wished to hear it chime before ordering. The clock was placed near the mouthpiece of the telephone, the chime was heard and pronounced satisfactory by the customer, and the sale was effected.

Ridding the Advertising Business of Its Pickpockets

Address Before the General Session of the Associated Advertising Clubs of America, at Toronto, Canada, Outlines Duties of the National Organization, the Club Units and Individual Members in Regenerating the Advertising Business—Better Day Coming

By R. R. Shuman
President, Shuman Advertising Co., Chicago

A great cry has gone up wherever honest advertising is bought that inquiries cost more and returns are harder to get each year than they were the year before.

Is advertising losing its potency? If it is, one factor enters strongly into the fact; the growing suspicion of advertising in the minds of the general public; and this suspicion can have but one cause—the same cause that makes a burned child dread the fire.

Confidence the Basis of Trade.

Marshall Field, the world's greatest merchant, declared "A man who will lie to make a sale is a fool." And he is right, because the basis of all trade is confidence; the foundation of confidence is satisfaction; satisfaction comes from service, and a house grows great not so much on the business it gets, as the business it keeps. So true is this that the man who lies to make a sale is not only a fool but also a suicide. If the folly ended with his miserable self our grief would be short; but the business liar commits hara-kiri, maiming and killing innocent competition by destroying the basis of all business—the confidence of the buying public.

These fools, these suicides, these hara-kiri fanatics have dragged the medicine business and the piano business and the land business into a stinking mire. They have prostituted the raincoat and the fur business and the furniture business. They have jeopardized the jewelry business; they have wrecked the mining stock business. Their trail of deceit has cost the business lives of thousands of honest men engaged in worthy callings. Of all forms of business insanity, the form of defrauding the public through advertising, is the most pitiful, the most tragic, and calls for the most vigorous remedies.

We have laws against personal suicide and laws against physical murder—the vigilance movement will not stop till we have adequate laws, and enforce those laws against business suicide and business murder.

If it be criminal for a salesman to lie and deceive one man in trying to close one sale, is not the advertising man or the advertising agency or the publisher a million times criminal when he spreads that lie before the trusting eyes of a million men or a million women?

The priceless privilege of sending our business message at the same hour into a million, ten million homes, carries with it an equal responsibility that the confidence of the men and women in those million of homes be not violated.

For if advertising shall live and thrive at all, it must live and thrive on the public's confidence in advertising.

A Pickpocket Incident.

At a political gathering in the rotunda of a great hotel—where a thousand men waited, standing for the arrival of the party leader, a man suddenly mounted a desk and shouted:

"I regret to announce that there is a pickpocket somewhere in this audience. Let every man beware!"

Instantly there was a clapping of hands to pockets, and the eye of every man was turned with suspicion upon every other man whom he did not happen to know.

The lying advertisement in a newspaper's page or a magazine's advertising section is a pickpocket, and the instant the public becomes aware of the presence of an unknown pickpocket in a publication's advertising, it buttons up its pockets in quick alarm and looks with suspicion upon innocent and guilty alike.

In that hotel lobby, shortly after the warning was sounded the same man mounted the same desk and announced that "the only preacher in the crowd" had been nabbed and sent to the lockup, explaining that the criminal in question was an old hand at the game of hiding his trade behind clerical garb.

So with some of the most dangerous advertising frauds that are plying the pickpocket trade, their announcements breathe the loftiest sentiments of virtue and disinterested kindness. This is especially true of the medical frauds, the fake investment frauds, the installment furniture and clothing frauds, and the back-to-the-land frauds that promise such a paradise of plenty to their unsuspecting victims.

Your vigilance committee is doing what it can to police the advertising thoroughfares and public places so that thieves and pickpockets shall find it dangerous to ply their trade.

One pickpocket ad in any publication can do more harm than 20 honest advertisers can undo, and it is only by going to the source of things—the city and state laws, the courts and the publisher's and the advertising agent's pocketbook—that we can get very far with the organized gang of pious frauds who are doing such inestimable harm to the business of advertising.

The Privilege of the A. A. C. of A.

A grand privilege lies before our great association as a whole; that of commanding and holding the attention of national law-makers; by the force of our very bigness—bringing to their attention, in an authoritative and impressive way, their duty to their constituents and to the public at large—the duty of protecting the confiding many from the designing few.

Laws we have in plenty for guarding the physically weak from the unjust use of strength by the physically strong, and laws we must have and are generously getting for protecting the mentally weak or unsuspecting from the mentally strong or designing. These laws can only be brought about by education—by creating such a wave of popular condemnation of dishonest advertisinng that the publisher who persists in acting as a paid go-between in the plundering of his subscribers will be forced to reform or forced out of business.

For without dishonest or complacent publishers, dishonest advertisers could not live six months.

Law-makers, by habit, have their ears to the ground, and they make it their business to give the people what they want. The people want protection. It is the function of our association to crystallize and organize that demand so that it will not longer go unanswered in the halls of the law-makers or the executive officers of our postoffice and police departments.

This educational work costs money, but as soon as the honest manufacturers and merchants realize that we, the advertising men of America, are in real earnest, with an efficient working organization back of us, our calls for

financial help will be met with prompt and generous response.

ADVERTISING CLUBS MUST CLEAN HOUSE.

And what is the duty—the privilege of our individual clubs? Is it not, first of all, to set our own house in order? To wipe out from our own membership every individual who is prostituting advertising to dishonest ends—every representative of every advertising agency that is guilty of writing and scheduling dishonest, indecent or misleading copy—every publisher who knowingly shares in the loot of robbers and charlatans?

I grant you this is a heroic task but it has been done by some clubs and it can be done by all clubs, and let me say right here that the club that performs this beneficial surgical operation will find its membership increase—for two honest men will step in to fill the place of every rascal kicked out.

Here, too, the work must be first of all educational-suasion; close, heart-to-heart admonition in privacy and not the blare of trumpets. Then, when moral suasion fails, let the big stick come down with a bang!

OUR DUTY AS INDIVIDUALS.

But most of all, the work of regeneration must begin with each man of us as a man and a citizen. Each sentence we write, edit or print must be weighed in the balance against the questions:

"Is it true?"

"Is it honest?"

"Will it mislead?"

"Is the merchandising back of it square and straight?"

"If I myself were to answer and act on the advice of this advertisement, would I be a gainer or a loser by that act?"

Remember, men, the public is a big, simple, forgetful, confiding child; let us, each of us, be a big brother to that child; helping, not hurting; guiding, not misguiding; so that that vast, simple-minded composite child will have faith in this big brother called "advertising"—faith founded on the honesty and unselfishness of our words and acts.

Advertising is too vast a power, too noble a calling, to be permitted longer to suffer from the piracy that now exists and has been growing for years. We must rid the high seas of the black flag, so that honest merchantmen can ply their trade in fearless confidence.

And we are doing it; not we alone, for hundreds of far-sighted publishers are blazing the way; in the quiet of their own advertising offices making money-sacrifices that look heroic; but which in their broadened vision are "good business."

All honor to these courageous men!

And the conscience of the advertising profession at large is being quickened on the one hand by fear of prosecution, and on the other by an honest desire to trade honestly—so that advertising today is more honest than it was yesterday.

DAWN OF A BETTER DAY.

And I see a not-far-distant "tomorrow" when honest advertising laws, honestly enforced; honest club membership, fearlessly purged; and a new conception of his duties and privileges by the advertising man himself, will so safeguard every public announcement, that advertising and advertising men will be given a new and higher place of honor in the public mind; and men who advertise honestly will receive their reward in the larger and surer return from their investment.

Stranger dreams than this have come true, friends; yours and mine are the duty and the privilege of hastening the glorious "tomorrow." This millennial day will come swiftly or slowly in proportion to the funds at our command. Each one of the vigilantes is giving freely of his time and money without hope of reimbursement or remuneration, and each man of us again and again writhes inwardly at his helplessness to put a stop to known evils that flourish before his very eyes—helpless for want of the money to employ experts to secure evidence, or to prosecute, even when evidence is at hand.

For this reason the greatest duty and the greatest privilege that lies before you this very moment is that of giving the money that will arm your committees, national and local so that they may fight your battle to win.

Financial Statement of Bell Companies.

The American Telephone & Telegraph Co. has issued a statement of its earnings for the six months ending June 30, 1914, and a statement for five months of the entire Bell telephone system in the United States, together with comparative statements for the corresponding periods of last year. These are as follows:

AMERICAN TELEPHONE & TELEGRAPH CO.

Earnings report for six months ending June 30, 1914:

	1913	1914
Dividends	$12,888,015	$12,685,930
Interest and other revenue from associated companies	6,441,142	7,124,677
*Telephone traffic (net)	2,996,030	3,042,824
Other sources	406,753	475,335
Total	$22,731,941	$23,328,767
Expenses	2,476,088	2,759,459
Net earnings	$20,255,853	$20,569,308
Deduct interest	3,790,037	4,203,604
Balance	$16,465,816	$16,365,703
Dividends paid	13,671,065	13,785,673
Balance	$ 2,794,750	$ 2,580,030

*One month estimated.

BELL TELEPHONE SYSTEM IN UNITED STATES.

Earnings report for five months ending May 31, 1914:

	1913	1914
Gross earnings	$87,871,945	$92,516,679
Expenses—		
Operation	30,397,235	33,578,753
Current maintenance	12,774,706	12,892,975
Depreciation	15,161,814	16,065,370
Taxes	4,458,297	5,034,822
Total expenses	$62,792,052	$67,571,920
Net earnings	25,079,893	24,944,759
Deduct interest	6,915,311	7,726,528
Balance net profits	$18,164,582	$17,218,231
Deduct dividends (paid for three months and estimated for two months)	12,607,163	12,666,815
Surplus earnings	$ 5,557,419	$ 4,551,416

Municipal Telephone and Lighting Plant for Dawson.

Dawson, Yukon Territory, is planning to establish a municipal electric lighting and telephone plant, at an estimated cost of $165,000, says Consul-General R. E. Mansfield, of Vancouver, B. C. The Dawson civic league, which is planning various improvements, recently petitioned the Yukon council against the annexation of the territory to British Columbia, and the surrender of its independence.

From Factory and Salesroom

Reorganization of Detroit Insulated Wire Co.

The official reorganization of the Detroit Insulated Wire Co. of Detroit, Mich., which became effective on June 25, 1914, gives that company a strong personnel.

Joseph H. Hunter, president of the company, was one of its original incorporators. He served as vice-president and general manager and succeeded to the presidency on February 20, 1914. The present prominence of the company in the wire field is due to his efforts. Mr. Hunter was formerly vice-president and general manager of the National Cable & Wire Co., and has been identified with electrical matters and manufacturing for many years.

J. G. Splane, the new vice-president, is a Pittsburgher by birth, in which city he received his education, and he is a graduate of the University of Pittsburgh. He held a responsible position with the Standard Oil interests from 1887 to 1903, and on May 18 of that year was elected president of the Pittsburgh & Allegheny Telephone Co. As a protective measure on the part of the minority stockholders, Mr. Splane and the Hon. William Flinn were appointed receivers for the company on January 10, 1911, and on June 1, 1914, the property was re-transferred to its stockholders and the receivership terminated, Mr. Splane at that time being named managing diector of the company.

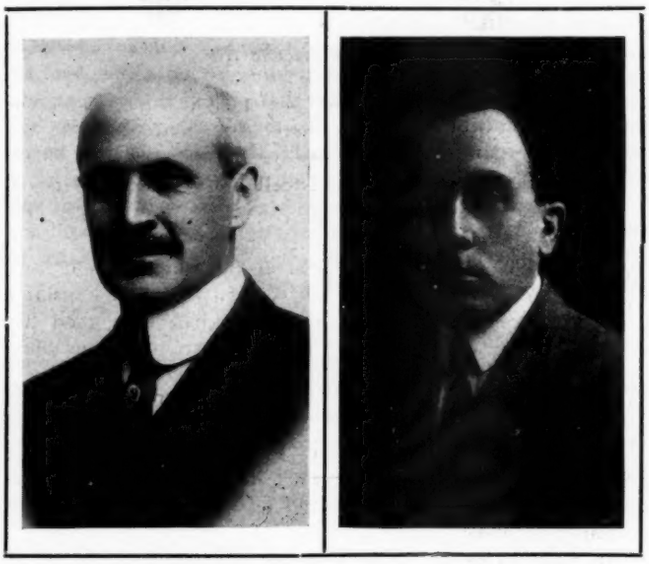
By reason of his connection as director with several manufacturing enterprises, his diversified business experience and his acquaintance in the telephone field, Mr. Splane's association with the Detroit Insulated Wire Co. should be of great benefit to that company, and such a result is confidently anticipated.

James Inglis becomes chairman of the board of directors, he having been connected with the company as a stockholder since its conception. Mr. Inglis' business career practically originated with the American Blower Co. He has been identified with that company since early

Joseph H. Hunter. J. G. Splane.

manhood, and as its president for the major portion of the time. Under his management it emerged from comparative insignificance to its present pre-eminent position. He is also a director of the National Bank of Commerce and the Michigan Savings Bank, was one of the organizers of the Detroit Board of Commerce and its president from April 1, 1906, to April 1, 1907, and is also financially interested in and officially connected with a number of other going concerns.

Mr. Inglis lends to the Detroit Insulated Wire Co. his broad and well-balanced business experience, and while his official connection with the company is largely in an



James Inglis. C. C. Gray.

advisory capacity (his energies continuing to be devoted to the American Blower Co.), it is felt the moral effect of his official association with the Detroit Insulated Wire Co. will make for added strength and influence.

C. C. Gray, the secretary and treasurer, has had charge of the selling activities of the Detroit Insulated Wire Co. since September, 1912, and formerly held a similar position with the National Cable & Wire Co.

W. G. Dalgleish, the assistant secretary and treasurer has been advanced from an inferior position with the company through diligence and merit.

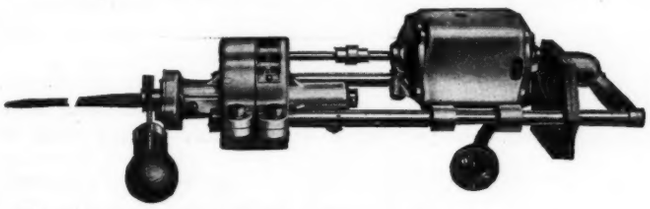
The new official arrangement is looked upon with much favor, and it is confidently expected that the company will profit largely by the change.

An Efficient Electric Drill.

An electric drill of percussion type designed for a wide variety of work is shown in the accompanying illustration. The instrument is known as the Locke electric drill and is made in two sizes, for $\frac{1}{16}$ and for $\frac{1}{8}$ horsepower. The current can be obtained from electric light wires, from a small generating set or from storage batteries.

The drill is used for varied purposes, among which are noted the following: For drilling holes in concrete floors for carpet sockets; in bath-room tiling for attaching fixtures; drilling holes for attaching fire extinguishers, securing theater seats; attaching window awnings, fire-escapes, iron railings, mounting signs; cutting holes in concrete by drilling a series of small holes and breaking out the solid part by the plug and feather system; drilling holes in partitions for electric wires or conduits, steam and water pipes; drilling and chipping square holes in marble panel work for electric fixtures; drilling holes for attaching racks for telephone or signal wires to stone or concrete abutments of railroad bridges or retaining walls; and for drilling holes in concrete floors for mounting machinery.

An important feature of the Locke Electric Drill is its simplicity of construction. It is declared that it has no parts to get out of order, is easy to operate and gives quick results. It is manufactured by the Electric Tachometer Co., Broad and Spring Garden streets, Philadelphia, Pa.



The Locke Electric Drill.

Cape Girardeau, Mo., Has Excellent Telephone Service.

No higher praise can be given a public utility company, says A. H. Hinchey in the Cape Girardeau Republican, of Cape Girardeau, Mo., than to say that it furnishes splendid service. When it is a telephone service that is under consideration it becomes more vitally necessary that it be good than in the case of any other service agency, because the telephone service is one of the most vitally important conveniences of a large community.

Among the most satisfactory telephone services of the country that of Cape Girardeau occupies a conspicuous place, it being freely said by those who use it, that it is truly excellent, the board being of Kellogg Switchboard & Supply Company's make.

In many cases the public is prone to criticize public service corporations, but owing to the persistent efforts made by the Cape Girardeau company to please its patrons, it is seldom indeed that one hears the telephone service condemned. On the other hand almost every one takes pleasure in saying good things about it.

The growth of the telephone system in Cape Girardeau is indicative of the city's growth, as in the past few years the system has grown from a small local line, connecting a few business houses and residences of the town, to a system serving every business house and nearly every residence in the city.

Fourteen hundred subscribers are served by the Cape exchange, 725 by the Jackson exchange, 75 by that of Oak Ridge and an unlimited free service is furnished between Cape Girardeau and Jackson, the county seat, and with nearly every other town in the county. The service to Jackson is especially good.

In conjunction with the daily rural mail delivery and the formation of rural clubs in nearly every community in Cape County, the service given by the Cape Girardeau Bell Telephone Co. has greatly bettered living conditions all over the county, offering the farmers of any community in the county an opportunity to keep in touch with all other communities.

Not only has the Cape telephone company kept pace with the growth of the towns, but also with the wonderful expansion that has been going on in the agricultural districts, which is giving to every Cape County farm the silo, a more comfortable house, better implements and a more scientific method of farming.

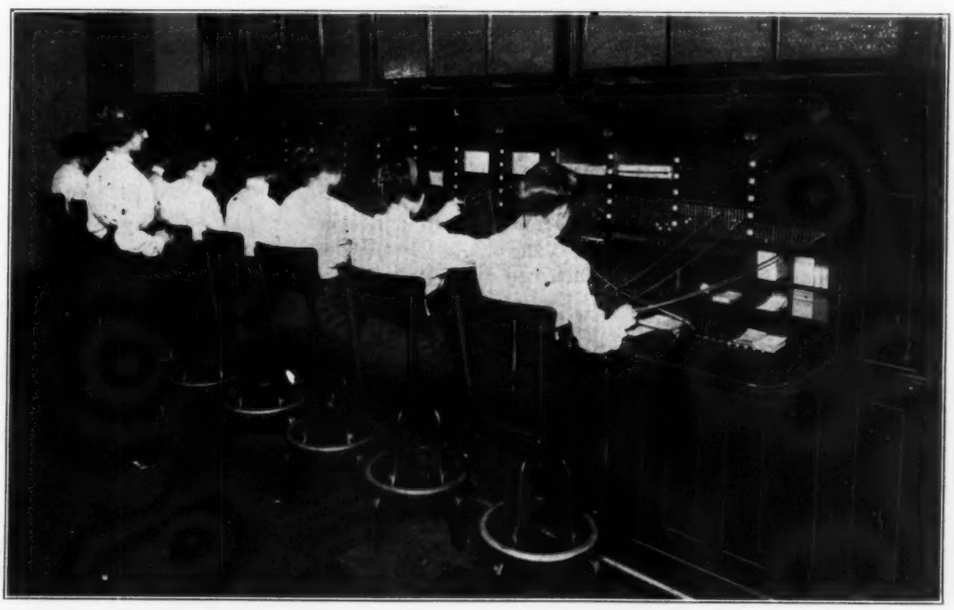
The number of calls handled daily at the Cape Girardeau exchange varies from 10,000 to 18,000, and the average time required to complete connections is 2 4/5 seconds, as shown by numerous tests.

The company is now installing additional facilities to care for 540 more local lines, another indication of the growth going on in Cape Girardeau.

The Cape Girardeau Bell Telephone system includes lines to Chaffee, Advance, Festus, and Farmington, Mo., and Chester, Ill., and exchanges are maintained at Ste. Genevieve and St. Marys.

The company occupies a fine building in Broadway, in the center of the city, which is fitted up not only for the expeditious handling of its large business, but with the convenience and comfort of its employes in mind. The operating rooms are large and airy, and rest rooms for the girls make it a pleasant place in which to work.

The officers of the company are: H. L. Rozier, president; John Tlapek, general manager; C. W. Boutin, secretary; Jas. F. Brooks, treasurer; and A. W. Berry, superintendent of plant.



Kellogg Switchboard and Operators at Cape Girardeau, Mo.

Complaints That the Automatic Will Eliminate.

An unusual complaint has been lodged with the New York Public Service Commission by W. A. Morgan of the Buffalo Taxicab Co., of Buffalo, N. Y., which recites that its Federal telephone number is 555; that it has, by large expenditures in advertising, familiarized the public with that number to a degree where it has come to be a very great asset.

Recently, continues the complainant, it has come to the attention of the company that calls for that number over the Federal lines invariably brought a response from a competing taxicab company. Test calls, it is alleged, have been made by members of the firm with the unvarying result that their competitors respond. In most instances the person calling, having no direct interest except to get a taxicab, has acceped the substitute number and considered the incident of little or no importance. In the aggregate, however, Mr. Morgn avers that thousands of dollars have been lost to the taxicab company through what he characterizes "a deliberate intent on the part of a telephone operator or operators to divert business."

In the complaint Mr. Morgan makes no charge against

the Federal company except insofar as it is responsible for the acts of its employes, and requests an investigation by the public service commission to supplement an investigation already made by the officials of the Federal company.

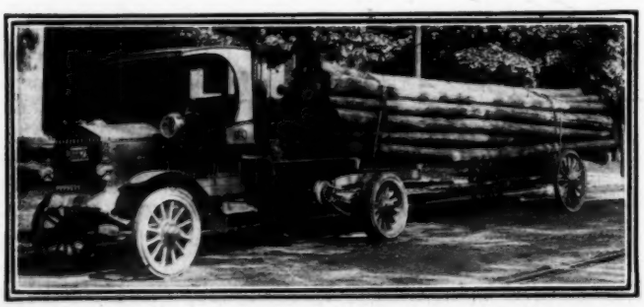
"It is regrettable, of course, if such a condition as this did exist," said Burt G. Hubbell, president of the Federal Telephone & Telegraph Co., "but it is one of those possibilities against which no degree of supervision offers absolute relief.

"Telephone operators are an exceptionally loyal class of employes, and this should be the time to explain that things of this sort very rarely happen, which is the more remarkable when it is understood that the possibilities of it are practically endless.

"The company will be prepared to answer Mr. Morgan's complaint insofar as evidence is possible. While the company regrets exceedingly the circumstance, it has always used the greatest degree of caution against such occurrences, and certainly cannot be held liable for anything like this, which is so manifestly beyond its control. We have informed Mr. Morgan to this effect, and have told him that when our automatic service is installed no such possibilities can occur."

Reo Trucks in Telephone Service.

The accompanying illustration shows a Reo Model J two-ton truck in the service of the United Telephone Co. of Bellefontaine, Ohio. Equipped with an ordinary two-



Telephone Company's Reo Truck at Bellefontaine, Ohio.

wheeled trailer, the Reo is ready to deliver a load of two dozen huge telephone poles wherever they may be needed and whenever they may be wanted.

This truck has become a standby in the construction and repair work of the United Telephone Co. During the year it has been in service, it has never been out of commission, and the owners state that it has incurred no expense except for the necessary gasoline, oil, grease, etc.

During a recent severe storm in the Bellefontaine territory, telephone service was crippled over some 25 or 30 miles of line, but, thanks to the rapid Reo, the damage was repaired in less than half the time the antiquated system of horse delivery would have required.

The advantages of motor trucks are being appreciated more and more by telephone companies everywhere in their regular construction work; but it is when miles of poles and wire are down, when minutes saved mean dollars saved, that the truck stands out in its true colors.

Sale of Argus Arresters Increasing.

Foote-Pierson & Co. of New York City, manufacturers of the Argus Arrester, advise that the sale and demand for this device is constantly increasing. Argus Arresters are not only extensively used throughout the United States at the present time, but may even be found giving good service in eastern countries, as far as Cape Town, Africa. A large shipment is being prepared for consignment to Russia. Any company desirous of procuring descriptive literature will receive it by addressing a request to Foote-Pierson & Co., 160 Duane street, New York City.

Stromberg-Carlson Reorganization.

Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has now accomplished the object which it started out to accomplish two years ago. It has liquidated a portion of its investment, and has reduced its capital and overhead charges. The successor company, which it had promised many of its customers would be formed, has now been organized and has taken over all the property and assets of the old company and will continue the business indefinately.

The new company has the same name as the old company and will, as before, be an absolutely Independent telephone manufacturing company. It is a New York corporation, owned substantially by the same stockholders, about 300 in number, most of whom live in Rochester, N. Y. and St. Louis, Mo. The personnel of the new company is as follows:

President, Frank N. Kondolf; vice-president, Fred C. Goodwin; treasurer and general manager, W. Roy McCanne; secretary and assistant treasurer, Wesley M. Angle. The foregoing, with A. J. Katz, George N. Todd and J. Foster Warner, will constitute the board of directors.

The new company has taken over the entire staff of employes of the old company. E. A. Reinke has been retained as sales manager and chief engineer in charge of the entire sales and engineering departments. He will be assisted by M. S. Van Vleet and J. A. Taggert in these departments respectively. A. M. Haubrick will be manager of the Chicago branch and N. W. Baldwin, of the Toronto, Ont., office. William J. Schuber is superintendent of the factory. The same staff of traveling salesmen will be maintained, with such additions as are required to better cover the territory.

Although under process of liquidation the company has, during the past two years, continued undisturbed its experimental and development work. Much new apparatus has been developed and faults in earlier apparatus corrected so that the new company declares that it starts off with the cleanest, sturdiest and best line of switchboards and switchboard parts, etc., ever put out under the Stromberg-Carlson name. The company will work, as in the past, for "Quality First" and good service to its customers.

Coffey System Installed at Nevada, Iowa.

The Coffey system of accounting is being installed by the Coffey System & Audit Co. of Indianapolis, for the Story County Independent Telephone Co., at Nevada, Iowa.

Paragraphs.

A. D. Carter, who for the past seven years has been local representative of the Kellogg Switchboard & Supply Co., in North Dakota and South Dakota, has severed his connection with that company to take effect on August 1.

Federal Telephone Line in British Columbia.

An appropriation has been made by the Dominion Government of Canada, reports R. E. Mansfield, consul at Vancouver, B. C., for constructing a federal telephone line along the east side of the Kootenay Lake from Pilot Bay to Kootenay Landing, which, with the completion of the links by the British Columbia Telephone Co. will give Nelson connection with East Kootenay and Calgary. A grant has also been secured for a 60-mile line from Nelson to Waneta, on the international boundary line.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personals.

J. B. GAFFNEY, of Deadwood, S. D., has been appointed district foreman of the Nebraska Telephone Co., at Norfolk, Neb., to succeed R. R. Hartford.

GEO. W. RUTHERFORD, district superintendent of the Nebraska Telephone Co., with headquarters at Deadwood, S. D., has been transferred to Fargo, N. D., where he will take charge of the line work for the company.

ARTHUR WILLIAMS, formerly manager of the Traverse City exchange of the Michigan State Telephone Co., has been appointed manager of the Petoskey, Mich., exchange, to succeed C. C. Kelly, who was transferred to Ann Arbor.

JAMES A. SEALS, formerly traffic engineer of the Interstate Independent Telephone & Telegraph Co., of Aurora, Ill., is now one of the Chicago representatives of the Anglo-American Oil, Coal & Asphalt Syndicate, Ltd., a British corporation which has a concession near the city of Maracaibo, Venezuela.

WM. PINNOW, chief construction man of the Port Washington exchange of the Wisconsin Telephone Co., has been promoted to the office of manager, to succeed J. Jensen, resigned.

GEO. T. KRAIGER, manager of the Dexter, Mich., office of the Michigan State Telephone Co., fell from a telephone pole and was killed instantly.

New Companies and Incorporations.

GRANBY, COLO.—Articles of incorporations have been filed by the Granby Telephone Co. with $10,000 capital stock. The incorporators are: G. W. Dow, A. C. Blayeny, and Edward McDonald.

HARPER, KAN.—Articles of incorporation have been filed by the State Center Telephone Co., with $2,500 capital stock. The incorporators are: E. F. Grimm, Runnymede; L. L. Heaton, H. E. Rice, M. B. Aler and C. E. Wister, of Harper.

OAK GROVE, LA.—The Oak Grove Telephone Co. has been incorporated with $12,000 capital stock to construct and operate a general telephone system.

WILSALL, MONT.—The Wilsall Mutual Telephone Co. has filed articles of incorporation with $10,000 capital stock. The directors are: E. G. Blair, J. M. Jones, H. W. Knox, Thos. Allpin, S. S. Working, E. T. Gruwell, and G. M. Parker, all of Wilsall.

KNOTTS ISLAND, N. C.—The Knotts Island Telephone Co. has filed articles of incorporation with $1,500 capital stock. The incorporators are Dr. J. D. Maynard and others.

WINDOM, TEX.—The Windom Telephone Co. has been organized here with a capital stock of $5,000. The incorporators are A. L. Clark, J. J. Cappleman and E. P. Price.

EPHRAIM, UTAH—An Independent telephone company is being organized to connect the various towns of Sanpete county. Over $11,000 has already been subscribed. John Judd and E. D. Sorenson, of this city, are interested in the project.

RHINELANDER, WIS.—The Pine Lake Telephone Co. has been incorporated with $400 capital stock by S. L. Reed, F. C. Ulrich and Jule Bardheim, all of Rhinelander.

Construction.

FRESNO, CAL.—The Pacific Telephone & Telegraph Co. will spend over $20,000 in improving its telephone facilities in this city.

MOLINE, ILL.—The board of receivers for the Central Union Telephone Co. is contemplating the installing of submarine cables in the Mississippi river at this point to connect the Davenport and Rock Island systems.

HAWARDEN, IOWA.—The Farmers' & Merchants' Telephone Co., which has recently purchased the properties of the Hawarden Telephone Co., will immediately rebuild the system in Hawarden and install one of the most up-to-date systems in the country. The improvements will cost $25,000 and it is expected that they will be completed this year.

HINDMAN, KY.—The Knott County Telephone Co. is preparing to construct new lines from Hindman, via Beaver Creek, to Wayland, Ky., and from Wayland to Garrett, a new city in the coal fields of Floyd county.

PIKESVILLE, KY.—The Citizens Telephone Co. will overhaul and repair its lines, and make a number of extensions, which will necessitate the expenditure of several thousand dollars.

WHITESBURG, KY.—The Whitesburg Telephone Co. is planning to make a large number of extensions and improvements to its system during the summer and fall months.

BATTLE CREEK, MICH.—The Michigan State Telephone Co. has appropriated $125,000 for extensions and improvements to its local system here.

DETROIT, MICH.—At the annual meeting of the Michigan State Telephone Co. the directors approved estimates aggregating $500,000 for improvements to its system, a greater part of which is intended for Detroit. The improvements include new cables and additional switchboard equipment for its 11 branch exchanges in this city. The company has just completed new exchanges in Ironwood, Sault Ste. Marie, Houghton, Monroe and Lapeer. New toll lines are being constructed to accommodate many new summer resorts.

LEXINGTON, MO.—The La Fayette Telephone Co. is planning to erect a new two-story exchange building in this city.

ZANESVILLE, OHIO—The Zanesville Telephone & Telegraph Co. will install a new automatic system in this city, entailing an expenditure of $100,000.

CHATTANOOGA, TENN.—The Cumberland Telephone & Telegraph Co., has completed preparations for the installation of a large telephone cable, to cost approximately $20,000, which will improve its facilities to suburban communities.

DALLAS, TEX.—The Southwestern Telegraph & Telephone Co. will install exchanges in Oak Lawn and Oak Cliff, suburbs of the city. Each exchange will cost in the neighborhood of $30,000, and the Oak Cliff exchange will begin with 4,000 subscribers and the Oak Lawn exchange with 1,500 subscribers.

COOKEVILLE, TENN.—The Gainsboro Telephone Co. is planning to expend $40,000 for improvements and extensions to its system during the next few months. The company's system now covers more than 30 counties in Tennessee and Kentucky and serves about 4,000 subscribers.

MADISON, WIS.—Improvements costing about $90,000 will be made to the plant of the Wisconsin Telephone Co. in this city. The present switchboard serves 7,400 subscribers, and its capacity will be increased to serve 8,500. The present office will be enlarged by adding a two-story fireproof structure of concrete, representing an investment of $45,000.

Underground.

MASSENA, N. Y.—The Mountain Home Telephone Co., with headquarters at Plattsburg, N. Y., is planning to install a new and modern common battery in this city. Many lines will be placed underground and the outside plant will be completely overhauled, at a cost of over $30,000.

SUPERIOR, WIS.—The Peoples Telephone Co. has filed a petition with the city council for permission to construct several miles of underground conduit to replace its present overhead cables and wires.

Financial.

BLAKESBURG, IOWA.—The Blakesburg Telephone & Telegraph Co. held its annual meeting recently, at which a 15 per cent. dividend was declared, which is the first dividend that has been paid since the company's rebuilding in 1910. The company now has 100 town subscribers and 240 rural.

WHITEWATER, KAN.—The Whitewater Telephone Co. has filed an amendment to its articles of incorporation, increasing its capital stock from $50,000 to $56,000.

BYRON, N. Y.—The Byron Telephone Co. has filed an amendment to its articles of incorporation, increasing its capital stock from $1,200 to $12,000.

DARIEN, N. Y.—The Darien Telephone Co. has increased its capital stock from $5,000 to $9,000.

MONTGOMERY, N. Y.—The Thompson Ridge Telephone Co. has filed an amendment to its articles of incorporation, increasing its capital stock from $1,000 to $2,500.

NEW YORK, N. Y.—The New York Telephone Co. has filed a certificate with the secretary of state, giving notice of an increase in its capital stock from $125,000,000 to $150,000,000.

LINWOOD, NEB.—At the annual meeting of the Linwood Telephone Co. a 6 per cent. dividend was declared.

GRESHAM, ORE.—At the annual meeting of the Gresham Telephone Co. a dividend of 20 per cent. was declared. The company is planning a number of extensions to its system, which will require over 40 miles of wire.

CATAWISSA, PA.—The Roaring Creek Valley Telephone Co. has declared a dividend of 11 per cent.

GIBSONIA, PA.—The North Pittsburgh Telephone Co. has filed an amendment to its articles of incorporation, increasing its capital stock from $20,000 to $50,000. Samuel Austen is secretary of the company.

ENDICOTT, WASH.—The Endicott Telephone Co. has reduced its capitalization from $6,000 to $2,000.

Elections.

RED BLUFF, CAL.—The Tehama County Telephone Co. held its annual meeting recently, at which the following directors were elected for the ensuing year: H. A. Andrews, James McCampbell, D. E. Masterson, George Vogelsang, Charles Million, Henry Clark and H. P. Andrews.

BLAKESBURG, IOWA.—The Blakesburg Telephone & Telegraph Co. held its annual meeting recently and elected the following officers and directors: Matt Huber, president; John Huber, vice-president; J. F. DeHaven, treasurer; John Huber, secretary; S. C. Snow, assistant secretary and treasurer; Matt Huber, John Huber and J. F. DeHaven directors.

DETROIT, MICH.—At the annual meeting of the Michigan State Telephone Co. the following officers were re-elected for the ensuing year: B. E. Sunny, president; A. Burt, vice-president; D. E. Waters, vice-president; L. G. Richardson, general counsel; A. von Schlegell, general manager; C. E. Mosley, treasurer; W. I. Mizner, secretary; B. S. Garvey, general auditor; C. L. Boyce, plant counsel; G. M. Welch, commercial superintendent; C. G. Sharpe, plant superintendent; W. A. Spencer, traffic superintendent.

GRAND RAPIDS, MICH.—The Citizens Telephone Co. held its annual meeting recently and re-elected its old directors to serve for the coming year. They are as follows: C. E. Tarte, E. B. Fisher, W. J. Stuart, Charles F. Rood, R. D. Graham and Cyrus E Perkins.

MINNEAPOLIS, MINN.—At the annual meeting of the stockholders of the Northwestern Telephone Exchange Co. the following directors were elected: U. N. Bethel, Theo. N. Vail, Casper E. Yost, J. O. P. Wheelright, E. A. Prendergast, W. B. T. Belt and E. W. Murphy The directors convened immediately and selected the following officers: President, Casper E. Yost; vice-president and general manager, W. B. T. Belt; secretary and treasurer, J. W. Christie; assistant secretary, W. W. King; auditor, W. A. Pixley.

BUTTE, MONT.—At the annual meeting of the Montana Independent Telephone Co. the following directors were elected for the ensuing year: T. S. Lane, John Macginnis, John F. Davies, D. J. Fitzgerald, H. K. Risley and F. E. Farwell. At a supbsequent meeting of the directors the following officers were elected: T. S. Lane, president; John Macginnis, vice-president; John F. Davies, secretary; D. J. Fitzgerald, treasurer, H. R. Risley, general manager, and F. E. Farwell, assistant general manager.

MANHATTAN, MONT.—At the annual meeting of the Gallatin-Madison Telephone Co., the following officers and directors were elected for the ensuing year: W. H. Sales, president; Charles Scollard, vice-president; E. B. Burket, secretary; R. H. Dean, treasurer, and Peter Alberda, Thomas D. Tice, Frank Jakle, S. Scanlon and George M. Lewis, directors.

LINWOOD, NEB.—At the annual meeting of the stockholders of the Linwood Telephone Co. Thomas Duda, J. B. Tichacek, Frank Faytinger, W. F. Dawson and F. F. Mundil were elected directors to serve for the coming year.

PENN YAN, N. Y.—The annual meeting of the stockholders of the Friend Telephone Co., the following were elected as officers for the next year: President, John Davis; vice-president, Thomas N. Davis; secretary, Ezra B. Hopkins; directors, A. O. Beers and Chester C. Culver.

CATAWISSA, PA.—At the annual meeting of the stockholders of the Roaring Creek Valley Telephone Co. the old board of directors was re-elected. They are: Wilson Rhoads, John Hughes, E. M. Bittner, Henry Craig and C. F. Rarig.

Franchise.

HILLSBORO, ILL.—The Montgomery County Telephone Co. is seeking a 20-year franchise from the city of Hillsboro. One of the provisions of the proposed franchise is that the company should install a central energy plant and make all its lines metallic. If the franchise goes through, work on the new plant will be started before August 1 and the entire system will be completed within a year. A. M. Howell is president and general manager of the company.

BELLFLOWER, MO.—The city council has granted a franchise to the Buel & Bellflower Telephone Co.

SAN BENITO, TEX.—The city council recently passed an ordinance granting a 50-year franchise to S. A. Robinson, trustee, to furnish this city with water, lighting and telephone service. Mr. Robertson will transfer the franchise to a group of Eastern capitalists, who contemplate the purchase of the properties which are at present owned and operated by the San Benito Land & Water Co.

WACO, TEX.—The Brazos Valley Telephone & Telegraph Co., with headquarters in this city, has applied to the Brazoria county commissioners for a franchise to construct and operate a telephone system in the town of Freeport, and also to construct a long distance line between Velasco and Freeport.

Miscellaneous.

WALDRON, ARK.—The two telephone systems of this city have been purchased by George Forrester and Jack Hill for a consideration of $7,000. The two systems will be combined, which, it is believed, will result in better service.

ALPHA, ILL.—The Alpha Mutual Telephone Exch. has purchased the properties of the Cox Telephone Exch., of Alpha.

MACOMB, ILL.—The Western Illinois Telephone Co. was sold at bankruptcy sale to C. M. Irwin, the purchase price being given at $140,000. It is said that extensive improvements will be made immediately in order that the plant may be placed in better shape to handle a larger volume of business, and Mr. Irwin will probably form a new company for this purpose.

HUNTINGBURG, IND.—The Home Telephone Co. is installing a new switchboard, and is overhauling its entire system.

HUNTINGBURG, IND.—The Cumberland Telephone & Telegraph Co. is seeking the approval of the Public Utilities Commission on the sale of six of its exchanges in Dubois county to the Dubois County Telephone Co., of this city.

VINCENNES, IND.—The Automatic Telephone Co., reported in TELEPHONY's Bulletin of May 22nd as seeking a franchise in this city, is the Pike County Telephone Co., of Petersburg, Ind., and C. H. Webb is general manager.

DUNKERTON, IOWA.—The Blakeville Farmers Mutual Telephone Co. has filed an amendment to its articles of incorporation, changing the name of the corporation to the Dunkerton Mutual Telephone Co.

LEAVENWORTH, KAN.—L. R. Parker, vice-president of the Peoples Telephone Co., has agreed with the War Department, at Washington, D. C., on the terms of a proposed sale of the plant of the company at Ft. Leavenworth to the government.

BEACH CITY, OHIO.—The Beach City Home Telephone Co. was sold at receiver's sale to B. P. Calaway, of Columbus, for a consideration of $2,810.

PITTSBURGH, PA.—The Pittsburgh & Allegheny Telephone Co., for three years operated by Wm. Flinn and J. G. Splane as receivers, was recently turned over to the stockholders and a reorganization effected. The following directors were elected: J. M. Brown, Robert C. Dalzell, J. L. Dickey, W. C. Handlan, Richard Hawkey, Frank C. Huling, J. G. Splane, John S Weller. The officers are: President, J. L. Dickey; Richard Hawkey, vice-president and general manager; Frank C. Huling, treasurer, and T. G. Davis, secretary and assistant treasurer.

IROQUOIS, S. D.—The Dakota Central Telephone Co., which operates an exchange in this town and whose headquarters are at Aberdeen, S. D., has purchased the properties of the Farmers' Telephone Co., of Iroquois.

ASHLAND, WIS.—The Ashland Home Telephone Co. has purchased the interests of the North Wisconsin Toll Line Co. and the Bayfield County Telephone Co. A deal is pending whereby the company will take over the local Bell exchange, and when final arrangements are completed Ashland will have but one telephone system.

MCGREGOR, TEXAS—The Gulf States Telephone Co., with headquarters at Tyler, Texas, will make extensive improvements to its exchange in this town, and will install a flash light system.

SAN MARCOS, TEX.—Negotiations are pending for the purchase of the local exchange of the Southwestern Telegraph & Telephone Co. here by the San Marcos Telephone Co. If the transaction is carried through the two systems will be merged.